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TRAVELLER®

THE MOUNTAIN ENVIRONMENT

by J. Andrew Keith

Gamelords, Ltd.

THE MOUNTAIN ENVIRONMENT

A Supplement for Traveller®

by

by J. Andrew Keith

Design and Development: J. Andrew Keith

Advice, Suggestions, and General Assistance: John Harshman, William H. Keith, Jr., Alfred Hipkins, Kerry Lloyd

Playtesting: Tom Kokkelenberg, Dave Hoffman, Larry Gniadek, Debbie Fulton, Dave Fulton, Mike Lichter

Illustrations: William H. Keith, Jr.

Editing: Kerry Lloyd

Layout: Michael Watkins

Graphics: Larry Shade, Janet Trautvetter

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Introduction

The Mountain Environment is a supplement for **Traveller** dealing with the particular problems connected with, and means of surviving in, rugged or mountainous terrain. The material presented here is intended to expand, not replace, the basic **Traveller** rules. It provides guidelines, procedures and ideas that the referee may feel free to apply or ignore at his discretion.

This booklet is divided into three major sections. The first, Rules, presents specific systems used to deal with mountainous terrain and the problems it may pose to adventurers. In the second section, Mountain Terrain, guidelines are offered for the creation of specific, challenging terrain types, including suggestions of the sorts of encounters and events one might look for there. Finally, Equipment covers the major items of gear which may prove important to the **Traveller** mountaineer.

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Rules

Except where specifically noted below, all normal **Traveller** rules and rulings are in effect. The referee may freely ignore or modify individual rules to tailor the material to the taste and abilities of a specific group; however, care should be taken not to modify without being sure that all the effects of a given modification are considered.

SKILLS

Characters who venture into rugged or mountainous terrain should have the knowledge or experience to cope with the special conditions to be found in these conditions. A general skill, Mountaineering, and a set of 'cascade skills' tied to it represent this expertise.

Few characters will start with knowledge of mountaineering, as it a fairly specialized type of skill. However, there is always a chance that a character has had some experience in climbing as a result of his home environment. A character who rolls 12+ on 2D can receive 1D-3 levels of Mountaineering skill. DMs applied to the roll should include DM+2 if tech level 4-7, or DM+1 if tech level Ø-3. No other DMs should, generally, be applied. If the character comes from a waterworld, no roll for mountaineering should be made.

A skill level of Ø indicates some familiarity, but no real expertise in mountaineering; if the skill rolled above is negative, treat it as skill level Ø.

Mountaineering skill can be improved in various ways over the course of a character's career. Characters serving in the Army may receive Mountaineering-1 during any term in which they roll a 9+. Characters in the Commandos (Book 4, Mercenary) automatically receive Mountaineering-1. Any time in which a character would normally receive +1 Strength, Survival, or Hunting skill, Mountaineering may be substituted instead. If desired, characters entering the Hunting career may instead be considered to be professional climbers (leading expeditions and tours into mountains); all career information is treated normally but Mountaineering is substituted for Hunting throughout.

Finally, mountaineering expertise can be developed by any of the training methods normally open to **Traveller** characters — self improvement, mercenary instruction, etc. However, once a character has reached Mountaineering-2, further increases must be earned through practical experience, meaning that characters aboard a ship or on a waterworld would be unable to study and improve Mountaineering.

General Description	Specific Game Effects
Mountaineering — The individual is familiar with one of several forms of climbing techniques, and understands the problems and procedures of activity in mountainous terrain.	Mountaineering skill, when received, is taken as one of three specific skills — Mixed Climbing, Rock Climbing, or Ice Climbing. These are discussed further below. Skill levels in these areas are used as DMs to avoid specific dangers related to climbing and mountain survival.

Mixed Climbing is also known as 'route finding'. It indicates the general knowledge of charting a route up a mountain which will involve the least difficulty and/or danger and the maximum speed. Mixed Climbing skill is a sort of 'catchall' for the vague collection of knowledge, expertise, and intuitive understanding that makes for a good climber.

Rock Climbing is much more specific. It relates to the process of scaling a steep or sheer slope, either with or without artificial assistance. Rock Climbing differs from the 'route finding' of Mixed Climbing in that route finding generally attempts to avoid such steep approaches, in favor of picking out easier approaches; the rock climber simply goes over the obstacle in question.

Ice Climbing is similar to Rock Climbing, but deals with techniques of climbing in snow or ice. A rock climber might deal with a steep cliff; the ice climber wuold be more accustomed to scaling a glacier.

For most mountaineers, a mixture of two or more of these cascade skills is more advisable than heavy expertise in only one. The character with Mixed Climbing skill will sooner or later be confronted with a steep slope which must be scaled, the rock climber working at high altitudes will eventually be faced with snow and ice, and so forth. If individual characters don't have such a balanced knowledge, then mountaineering parties should be mixed to include each type of expertise — unless the object of a particular climb is highly specific . . . say to scale a particular cliff to accomplish a commando raid in a temperate climate. In this case, rock climbing alone would be necessary.

Listing: Mountaineering skill must frequently be taken as a total, rather than as individual cascade skills. Because of this, it is recommended that the total mountaineering skill be listed first, followed by the various cascade skills in parentheses — i.e., Mountaineering-4 (Mixed Climbing-2, Rock Climbing-1, Ice Climbing-1). It should be noted that a level-Ø skill will be held in all cascade skills once the characters holds any Mountaineering skill at all.

MOVEMENT

The speed at which characters may cover ground in rugged or mountainous terrain will vary enormously according to the difficulty of the terrain, the skill of party members, and many other factors. Certain basic limits should apply, however.

On relatively level ground, a character may travel roughly 500 meters in 10 minutes. When a mountain has been created (according to the rules presented later in this booklet), distances which must be

crossed to pass over any particular terrain feature will be known. The Movement Rate table shows the modifications caused by factors such as slope, surface conditions, and the like. Some specific, highly specialized terrain features will further affect travel times — these are covered more fully in the **Special Encounters and Events** section of this booklet.

Skills: Travel rates are modified slightly by mountaineering skills. For every level of a suitable skill, the Base Rate of travel is increased by 100 meters per 10 minutes. A **suitable skill** is one applicable to the specific conditions of a climb — **Mixed Climbing** skill is always usable as a modifier; **Rock Climbing** is added if the slope is steep; **Ice Climbing** is added if snow or ice cover is present as well. If a party is travelling together, the movement rate of the party will be that of the slowest member — unless characters are willing to break up the party, usually not a wise idea.

Exertion: It is also possible to vary the rate of travel by varying the amount of effort expended. Characters may set the Base Rate at anything from 300 meters per 10 minutes to 1000 meters per 10 minutes, but they will also vary accordingly in the amount of effort they expend. See the Exertion Table for details.

Rock Climbing: If slopes of greater than 60° (sheer slopes) are crossed, the difficulty of the terrain makes normal movement impossible. The techniques of Rock Climbing (q.v.) are brought into play instead.

MOVEMENT RATE TABLE
(Distance Travelled in 10 Minutes)

Basic Movement Rate	500 meters
Gradual slope (15°)	Base Rate x 1.00
Gentle slope (30°)	Base Rate x 0.75
Moderate slope (45°)	Base Rate x 0.50
Steep slope (60°)	Base Rate x 0.25
Sharp slope (75°)	Use rock-climbing rules
Sheer slope (90°)	Use rock-climbing rules
Tiltback (105°)	Use rock-climbing rules
Severe tiltback (120°)	Use rock-climbing rules
Light snow cover	Base Rate x 0.50
Deep snow cover	Base Rate x 0.25
Glacier or ice cover	Base Rate x 0.25

Note: Apply all applicable modifiers (i.e., travel on a steep slope with ice cover would yield a modifier of Base Rate x 1/16, or 31.25 meters in 10 minutes).

ROUTE FINDING

The art of finding the best possible routes up the slopes and cliffs of a mountain is one which requires knowledge and experience; without this ability, climbers face the possibility of running into great danger. Planning and execution of a climb, then, call for careful consideration of a route.

The section on **Mountain Terrain** describes the method by which the referee prepares the mountain terrain to be conquered. This creation process will yield the nature of the terrain from the base to the summit. The hazards to be encountered will either be created at the whim of the referee, or will be derived from encounter tables assembled for various special terrain groupings. Route finding comes into play as a group of characters actually attempts to tackle the challenge created by the referee.

Route finding in these situations will take on two forms. The first of these is the ability to **plan** a route.

The overall layout of the mountain — the pattern of ridges, walls, slopes, and so forth — should always be available to the group right from the start. Using basic common sense, anyone can determine distances and speeds and come up with the optimum route. Characters who apply themselves, however, may be able to spot potential hazards that might make the apparent 'optimum route' a deathtrap.

While planning, the character with the highest level of Mixed Climbing skill should be permitted a series of die rolls to uncover possible problems in the climb. One roll is made for each terrain feature that the group intends to make part of its route. The roll must be equal to or less than the character's Education; Mixed Climbing skill is subtracted from the roll. If the roll is achieved, any special problems lurking in the terrain type in question will be noticed. This permits the group to find alternatives or to be prepared for the problem in question.

In **execution** of the climb, route finding is also important in avoiding obstacles. The Mixed Climbing skill of the leader (who need not be the person of highest climbing skill — leadership skill and other considerations will frequently argue otherwise) is subtracted from the roll made for events and encounters. This permits skilled characters to avoid dangers which might otherwise threaten the climb.

ROCK CLIMBING

The process of scaling steep slopes is called Rock Climbing in these rules. This is the sort of climbing most people picture when they think of mountaineering. Depending on the difficulty of the terrain, rock climbing can range in complexity from a scramble for hand and foot holds, up to a climb made using various sorts of mechanical aids.

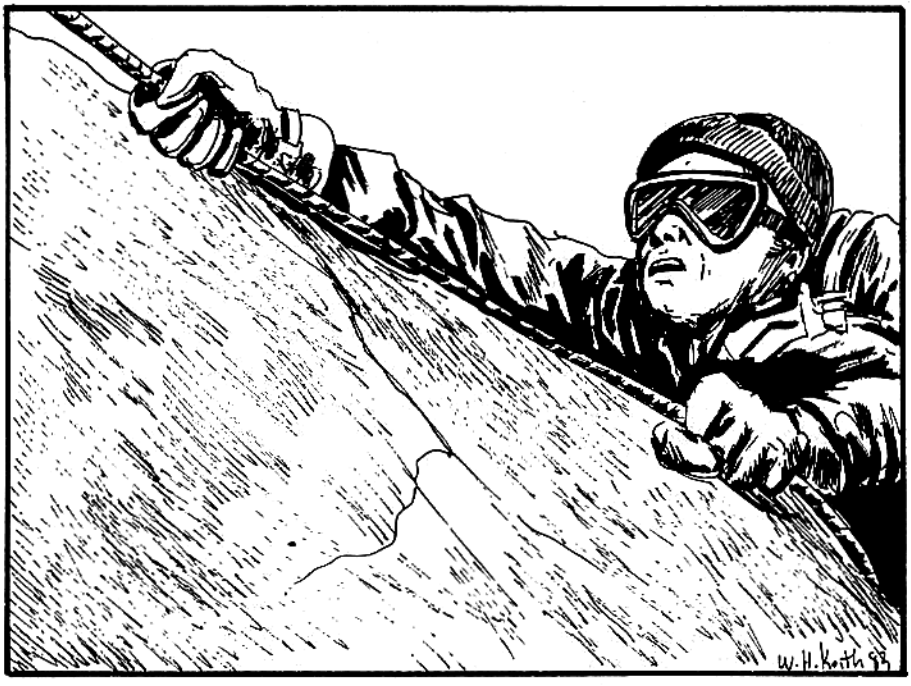
Each time Rock Climbing is undertaken, the characters involved are referred to as 'climbing a pitch'. Individual pitches are normally rated in difficulty between 1 and 5 — some extremely difficult pitches, though, under very adverse conditions, may range as high as difficulty 8 or 9. A level-1 pitch will be comparatively easy; a level-5 pitch will require much more time, difficulty, and danger. The methods for determining difficulty of individual pitches are relatively simple, and are described in more detail in the section on **Mountain Terrain**, as part of the information on WALLS. Normally, information on pitches is developed only for walls or other faces with Sharp slopes (75°) or greater, but referees may choose to develop pitches on faces with Steep slopes (60°).

A 250 meter tall shev (a steep to sheer, or worse, face) will have one or more pitches; the number of pitches present is determined by rolling (1D+1)/2 — round fractions up. When the resulting number is divided into the overall height, the average height of each of the various companion pitches for that face is determined. Referees may vary the average height of a pitch by 1Dx5 meters, plus or minus — this amount should, of course, be added to, or subtracted from, the average height of one of its companion pitches. Difficulty for each pitch should be determined individually.

When characters prepare to climb a pitch, specific procedures should be followed. The referee should determine both the height and the difficulty of the pitch. One character is designated as the 'lead climber'. Other climbers may follow as the lead climber is climbing, or may wait for the leader to reach some particular point of the climb before setting off. If the leader is climbing with ropes for aid, at least one character should be designated as being in charge of the rope — 'belaying' the climber.

The lead climber is the trail blazer of a party. He climbs, and, in climbing, sets the pitons and ropes needed to get the rest of the party, supplies, and equipment up safely. On fairly simple pitches, or where all members of a party are skilled rock climbers, several may climb simultaneously, all using the lead climber procedure.

When the lead climber is ready to climb, the referee should roll a number of dice equal to the difficulty level of the pitch. When divided



into the total distance of that portion of the climb (never more than 250 meters at a time), the result yields the amount of distance that can be climbed in a 10-minute period. Thus, if the height of a pitch is given as 125 meters, and the result of the difficulty level dice roll was 20, a climber could ascend at an average of approximately 6 meters every 10 minutes; the total climb will take three hours and twenty minutes (3:20) to complete. Had the result of the dice roll been 10, instead, only an hour and forty minutes (1:40) would be required for the same 125 meter climb.

During the climb, events will occur at a fairly frequent rate. One event roll should be made for each die thrown for difficulty; thus, difficult pitches are more hazardous than those that are comparatively simple.

Once the leader has completed the ascent of the pitch, ropes can be arranged and anchored to allow other members of the party to ascend more quickly and safely. A character with any type of Mountaineering skill (even at a rating of Ø) can ascend ropes set by a leader at a speed of 60 meters every 10 minutes. Characters with no climbing skill climb in this fashion at 20 meters per 10 minute period.

Each character rolls separately for events, at the rate of one per level of difficulty of the pitch. Some idea of how the climb is being done — who is using what rope, etc. — can help the referee to take into account the effects that an event suffered by one character might have on another.

Rock Climbing Skill: A character with Rock Climbing skill subtracts the level of this skill from the difficulty roll of any pitch, if the character is climbing independently (a lead climber). Rock Climbing skill is also a favorable modifier in resolving events and avoiding hazards, as is outlined in the section on **Special Encounters and Events.**

Cleaning the Pitch: After a climb, characters may want to 'clean the pitch' — removing pitons and other gear used in making the ascent (particularly if there is a possibility of running short of pitons). A character with Rock Climbing skill may be designated to clean the pitch; this individual comes up last, and uses the movement rate for non-skilled individuals. As he does so, the character removes gear used by the leader to assist the climb. Some (1D×10%) of the pitons used will not be recoverable for one reason or another.

Technical Climbing: It would be possible to go into great detail concerning technical aspects of a climb. However, to do so would force players to learn more than they may care to know about climbing. Thus, these rules do not focus too much on individual techniques; it is assumed that characters with the appropriate skills know what to do, even if the players don't.

A few special cases, however, are covered in somewhat more detail, as needed.

Belaying: Belaying is a process whereby one character uses a rope to anchor another during a climb. This allows the climber a measure of safety in case of a mishap.

During any climb, characters must designate whether or not they will be using a belay. If they do, the difficulty dice roll is subject to a DM+1 per level of difficulty. This represents the extra time (and hence the additional possibility of danger) involved in setting and anchoring ropes and the hardware to hold them during the climb, as well as the additional problems actually posed by maneuvering with the ropes hampering some motions.

Belays may also be used when characters are climbing ropes already set, or when a character is descending. They are not necessary, and, in these two cases, slow the speed of ascent by 1/3, but can save the lives of characters in a danger situation.

If a mishap occurs while a characters is belayed, the character handling the belay rolls against Strength to check a fall by the victim. Mountaineering skill (the total of all available cascade skills) is used as a negative modifier. If the roll is less than or equal to Strength, the character falls only a short distance, and is checked by the rope. If the roll fails, so does the belay, and the character is in serious trouble. Multiple characters may pool their Strength on belay, but only the highest mountaineering skill present can be used.

Pitons: Most types of mountaineering equipment are not sufficiently important to track separately. Pitons, however, are of considerable importance. These spike- or wedge-like implements are lodged in convenient cracks and crevices; they serve as handholds, footholds, and, most importantly, anchor points for ropes.

Piton use is based on the difficulty of the pitch. The number of pitons to be set while climbing a pitch is set at the difficulty level of the pitch times the height in meters climbed, divided by 10. For example, on a 100 meter pitch with a difficulty level of 4, 40 pitons (4x[100/10]) would be used during the climb. If this number of pitons is not available, determine how high the character can get on the pitch with those he has available — unless arrangements can be made to reuse pitons (by having someone clean the pitch in the wake of the leader, for instance), the excess distance becomes a new pitch with a difficulty level 2 higher than previously determined. A character who climbs this does so at normal rates, but cannot be belayed (pitons are usually needed to arrange a belay from below).

Ice Climbing: If conditions on the pitch involve snow and ice, Ice Climbing skill and Rock Climbing skill should be averaged (round fractions down) to determine the character's ability to deal with that pitch. Otherwise all procedures are identical; speed is not significantly affected, since the very presence of ice or snow will already have been accounted for in setting the difficulty of the pitch.

Traverses: At times it will be necessary to move sideways across a sheer wall, as when an obstacle blocks the way along a sheer-sided ridge or arete. A traverse is similar to a regular climb; determine the distance to be travelled, the difficulty of the traverse (treat as a pitch), and, as usual, the time required. It is most common for belays to be used, as traverses can be extremely hazardous to all concerned. Once the leader has crossed the pitch, belays can be worked from both sides.

Descents: Descents are somewhat easier than ascents, since belays from above are possible. The rates given for rope climbing may be used for descents as well (60 meters/10 minutes with experience, 20 meters/10 minutes without). These rates can be greatly increased with the use of mechanical assistance, as presented in the section on Equipment.

Climbing in Different Gravity: In addition to changing carrying capacity, climbers will find that a climb in different gravity conditions will change certain aspects of the climb.

The modifier applied to carrying capacities should also be applied to certain other aspects of climbing as well. Use the Gravitational Effects chart provided here to determine the change in the difficulty number of a pitch, and the amount of damage suffered from a fall (apply the percentage to the number generated using the normal methods — round fractions up).

GRAVITATIONAL EFFECTS

World Size	Effect
1	12.5%
2	25.0%
3	37.5%
4	50.0%
5	62.5%
6	75.0%
7	87.5%
8	100.0%
9	112.5%
A	125.0%

Climbing in a Vacc Suit: Climbers forced by conditions to wear Vacc Suits (either because of poisonous air or a lack of air) will find that the gear hinders them severely. The chance of a mishap is increased by 1; the difficulty of any pitch is increased by (6-Vacc Suit skill) points.

When climbing on a vacuum world, there are — of course — no weather effects, though ice may still be present to impose its usual problems.

Climbing in Zero G: This refers not only to climbs made where a lack of planetary gravity exists (on a large asteroid, for instance), but also to climbs made while using a grav belt on normal planets. Lack of gravity makes climbs considerably easier; it is possible to go straight up the sheerest cliff with a minimum of difficulty — just as if the cliff were a level plain.

However, climbs made with grav belts present a few problems. First, failure of the grav belt for any reason can be catastrophic — unless the character has taken the precaution of using safety lines. Wind, too, is a problem; roll once every ten minutes for wind to cause a mishap, according to the vehicle rules presented elsewhere in this booklet. If not tethered by lines, a mishap can sweep a character away from his current location. Mishaps could also cause the character to plunge into a cliff face, taking the full damage normally associated with a fall; this is the only time that Zero G conditions will result in a 'fall'.

Grav belts can be more profitably used by allowing the owner to select a specific gravity setting, and then functioning as if the gravity of the planet were much lower. Use the Gravitational Effects table to regulate this.

ACCIDENTS AND FALLS

There is an ever-present danger of a mishap in all forms of mountaineering. Climbers face particular problems due to the nature of the terrain in which they operate; mishaps can cause hazards all out of proportion with the usual seriousness of the accident. This makes climbing an especially difficult and often dangerous undertaking.

Mishaps may occur in a variety of ways, each of which should be checked as applicable.

Equipment Failure: There is a constant possibility that equipment will give way — a rope fraying from too much strain, an old piton giving way under a climber's foot, etc. Equipment failure should be a standard part of any Event Table, as discussed in the section on **Special Encounters and Events.** If an Equipment Failure result occurs, the referee should choose a specific item of equipment being used by the party. Each time it is used (or once every 10 minutes, if it is in constant use), the referee should make 2 rolls. The first is a saving throw for a randomly chosen character to notice the possibility of equipment failure — this throw should be made against Intelligence, and permits the character to spot a fault in time to take action. The second throw is made against the **reliability** of the equipment — a figure, usually based on tech level, discussed for individual pieces of equipment.

Should failure occur in the same period as a character notices the flaw, it should be considered nearly simultaneous. The character noticing would have an extra chance to prevent the disaster, but only on a roll of Dexterity or less.

Wounding: Any time a character is hurt while climbing, there is a chance that this will cause a further mishap. A roll against Dexterity must be made to avoid such a mishap. A DM+1 is applied for every die rolled for damage on the original injury.

Chain Reaction: One character may suffer a mishap as a result of another's difficulties, especially if the two are linked by a rope. The order of a roped party should always be known; if the individual immediately ahead or behind a character suffers a mishap, the character should roll against Dexterity to avoid the same mishap. This may be transmitted all along a linked chain.

Fatigue: The rules on fatigue (under **Endurance and the Mountain Environment**) outline the possibilities of an exhaused character suffering a mishap during a climb.

Slips and Stumbles: The character in the lead of a climbing party — the 'lead climber', as defined above in the section on Rock Climbing — should roll once to avoid a mishap automatically every ten minutes. The roll is Dexterity or less, with any applicable mountaineering skill applied as a negative DM; Mixed Climbing for ordinary travel, Rock Climbing for steep or worse walls, or Ice Climbing for ice or snow conditions. Failure of the roll leads to a mishap.

Events: Some events cause a chance of mishap, as discussed in the section on **Special Encounters and Events.**

Mishap Procedure: When a mishap occurs, it normally results in a fall. Falls can be dangerous, especially for characters climbing a 250 meter sheer cliff; in less extreme conditions, a fall can cause anything from a bruised ego to a dangerous wound.

When a mishap takes place, the character may attempt a saving throw — Dexterity or less — to avoid the worst of the problem. On an ordinary slope, this would result in a stumble or a slip which causes no damage. On a steep or worse slope, the character may be able to grasp a projecting rock to check the fall. In this latter case, the character would be required to roll Strength or less to recover himself from the difficulty (one roll every combat round); if that roll falls, roll Endurance or less to hold on for the round. A character hanging in this fashion can be rescued by other characters if they can reach the victim before his Endurance gives out.

Falls: A character who falls will suffer a set degree of damage, determined from the schedule below.

Gradual slope (15°):	1D-3
Gentle slope (30°):	1D-1
Moderate slope (45°):	1D
Steep slope (60°):	2D
Sharp slope (75°):	1D for every ten meters of fall.
Sheer slope (90°):	1D for every ten meters of fall.
Tiltbacks (105°+):	1D for every ten meters of fall.

A character roped off will fall only the length of the rope — usually (unless otherwise specified) no more than 50 meters. The character may throw one less die on the required damage throw for every level of Mixed Climbing skill that individual has.

If a belay is being used, the belaying character rolls against Strength as a saving throw; success averts the entire mishap (the character on the line falls only a short distance before being checked by the rope).

ENDURANCE AND THE MOUNTAIN ENVIRONMENT

The basic **Traveller** rules for Endurance are quite sufficient for most purposes. Characters doing a great deal of cross-country travel, however, will be subject to fatigue much more often than those who operate starships or stay in an urban setting. And mountain climbing can be particularly strenuous.

For this reason, special rules for dealing with Endurance and fatigue are particularly useful. The referee should note that these same rules can be applied to almost any **Traveller** situation, if the realism and greater complexity seem worthwhile. Certainly any situation which involves wilderness travel would benefit from these additions.

Endurance: For the purposes of these rules, the basic **Traveller** Endurance stat should be used in three different ways. Each character should separately keep track of Permanent Endurance, Basic Endurance, and Temporary Endurance.

Permanent Endurance is used as the term by which the standard characteristic is known in these rules. Permanent Endurance is the stat against which wounding is tracked; when Permanent Endurance is lowered, it can only be recovered by the wound recovery process outlined in **Traveller**.

Basic Endurance is used to chart a character's daily ability to function. Basic Endurance is lowered by fatigue, and can only be recovered by sleep; it can never be higher than Permanent Endurance, but can frequently be lower. When a character's Basic Endurance reaches Ø, that character is **exhausted**, and must sleep or suffer a reduction of Permanent Endurance.

Temporary Endurance tracks a character's ability to exert himself over a short period of time. Temporary Endurance is reduced by various types of exertion, and is recovered by rest. Basic Endurance is always the ceiling for Temporary Endurance. When Temporary Endurance reaches Ø, the character must rest; each time a character rests, it is necessary to check and see if Basic Endurance is reduced before the character goes on.

Tracking these three levels of Endurance is not as difficult as it may seem at first. Temporary Endurance is always the guiding stat for purposes of determining a character's present abilities. Basic Endurance is only of interest at times when the character must determine his ability to push on after exerting himself. Permanent Endurance is only considered at the start of a new day, or for purposes of recovery from a wound.

Exertion and Rest: Various tasks that a character undertakes in the course of a day will weaken that character. Even light work can cause a character to grow fatigued, and the heavy exertions of climbing a sheer cliff face can tire an individual rapidly. The Exertion table shows some typical endurance costs for such exertion; these costs are taken against Temporary Endurance only.

A character may recover Temporary Endurance by resting. A rest period of 10 minutes recovers 1 point of Temporary Endurance. Naturally, Temporary Endurance cannot in this manner be raised above Basic Endurance.

If Temporary Endurance reaches Ø, a rest period is mandatory; the character simply cannot go on. Should a single task be such that it will cause the character to go below Ø in Temporary Endurance, the character may still attempt the action; the referee should secretly roll 2D against the Basic Endurance. If the roll is less than or equal to that number, the character may complete the task, ending with Ø Temporary Endurance. Failure of the roll will result in an automatic mishap for the character in question.

Each time a character rests and then begins activity again, the referee should roll 2D and compare the result to the character's current (recovered by rest) Temporary Endurance. If the roll is higher than this figure, Basic Endurance is reduced by 1; successfully making the throw indicates no Basic Endurance loss.

A character may rest longer than would normally be required in order to recover Temporary Endurance, up to the Basic Endurance level. This doesn't increase Temporary Endurance any further for normal purposes — but, as a special case, the throw for loss of Basic Endurance can be made as if the character had the higher endurance 'recovered' through prolonged rest. This is allowed in order to compensate characters who begin with a low Endurance stat.

Exertion and Altitude: The exertion table notes the fact that loss of Endurance will be suffered merely for being in a particular level of air pressure. A character used to a Standard atmosphere will find it more difficult to function in a Thin atmosphere, for example. This is true until such time as a character becomes 'acclimated' to conditions of a particular type.

Acclimation to a specific air pressure will take any given character 2D days. A DM-1 should be allowed for each of the following circumstances: Strength 9+, Endurance (Permanent) 9+, Mountaineering Skill (any level). Obviously a character raised in that particular area and recruited for a mountaineering venture will already be acclimated.

Fatigue and Sleep: As noted above, Basic Endurance is reduced as a character travels. It is raised, in turn, by sleep.

Most characters, under normal conditions, need 8 hours of sleep. If a player wishes to argue about this (and it is true that many people can get by with less), individual characters can be permitted less sleep. The player should roll 2D, and compare the number to Permanent Endurance. If the result is less than or equal to the number, deduct 1 hour from the required total; if greater, add 1 hour. A series of such rolls may be attempted, but a DM+2 is applied for each roll after the first, making it increasingly difficult to achieve the throw.

At any event, once a standard need for sleep is set, this figure will remain relatively constant. It is used to set the Basic Endurance Recovery Rate for the character. When a character sleeps for the full period indicated by his need for sleep, he recovers sufficient Basic Endurance to bring the level equal to his Permanent Endurance. Fractional amounts of sleep lead to fractional recovery of Basic Endurance. Thus, a character with Permanent Endurance of A works all day, reducing Basic Endurance to Ø; eight hours of sleep would bring the level back to A, four hours sleep would bring it to 5, and so forth. Fractions should always be rounded **up.**

A character who reduces Basic Endurance to Ø is suffering from fatigue. If the character does not immediately sleep, roll against Permanent Endurance. A successful roll allows the character to temporarily recover to Basic Endurance 1, but at the cost of 1 point of 'wounding' to Permanent Endurance.

This process can be repeated, at an increasing toll to the body. Failure of a roll when fatigued causes the character to pass out immediately, no matter what situation the character may be in.

If a character sleeps longer than necessary, there is no particular benefit, save that every extra four hours of sleep, over and above required amounts, will heal 1 point of fatigue damage to Permanent Endurance (only).

Wounding: When a character is wounded, and suffers an Endurance loss, both Permanent and Temporary Endurance levels are reduced by the amount of the wound. If either figure drops to Ø, the character will pass out. However, a wound is not considered serious or fatal unless Permanent Endurance is at 0, together with one or two other stats. But it is true that a tired character will have a greater chance of collapsing in a fight.

Altitude and Sleep: Sleep is affected by air pressure; people in thinner atmospheres tend to need more sleep. One hour is added to the time required for recovery of Endurance through sleep for every .25atm difference in pressure between the current, higher altitude and the character's normal air pressure. Acclimation does not help this; only by sleeping in air of the appropriate 'normal' pressure will the character avoid this penalty.

Characters are assumed to come from 1atm pressure unless the referee specifically determines that they are from a world with higher or lower pressure.

Very High Altitudes: It is possible, but by no means desirable, for characters to venture to altitudes rated as having a Very Thin atmosphere, without oxygen supplied (the conquest of Earth's Mt. Everest, where summit air pressure was roughly .25atm, was first accomplished without carried oxygen supplies). However, human beings can never fully adjust to the pressures of a Very Thin atmosphere. In addition to the usual problems of exertion at an unaccustomed pressure (and acclimation to Very Thin atmospheres is not possible), a character

suffers 2 points of damage for every hour spent in a Very Thin atmosphere without oxygen; Endurance is reduced first.

Once Endurance has reached Ø, damage is applied to Strength. When this second stat reaches 0, the character will lose both Dexterity, and, as oxygen-starved brain cells are affected, Intelligence. Intelligence losses are permanent; others can be recovered by normal procedures.

As long as a character can use an outside source of oxygen, these effects do not become a problem. Note that several characters sharing one oxygen source would each slow, but not eliminate, their loss during work in a Very Thin atmosphere.

Trace atmospheres cannot be breathed. A character will die within a matter of minutes in a Trace atmosphere, unless in a pressure or Vacc Suit.

EXERTION

Activity	Endurance Loss Rate
Light Activity (routine work)	0.25 points/hour
Heavy Activity (hard work)	0.50 points/hour
Travel on Foot, level ground	0.50 points/hour
Travel on Foot, rough or jungle	1.00 points/hour
Travel on Foot, gradual or gentle slopes	1.25 points/hour
Travel on Foot, moderate slopes	1.50 points/hour
Travel on Foot, sharp or steep slopes	2.00 points/hour
Travel on Foot, tiltbacks	2.50 points/hour
Rock Climbing, Type 1 pitch	2.00 points/hour
Rock Climbing, Type 2 or Type 3 pitch	3.00 points/hour
Rock Climbing, Type 4 or Type 5 pitch	4.00 points/hour
Rock Climbing, Type 6 or worse pitch	5.00 points/hour
Atmosphere 1 level thinner than accustomed	+ 1.00 points/hour
Atmosphere 2 or more levels thinner	+ 2.00 points/hour
Atmosphere is Very Thin	+ 2.00 points/hour

Notes: Activities on the chart above should be those most applicable. Light activity, for instance, would be any quiet, non-strenuous action — office work, etc. Heavy activity would include hard labor, setting up a camp, carrying a heavy load (anything that encumbers), etc.

Times here are given in hours. The 10-minute periods most commonly used in these rules should be kept track of — if a mixture of terrain types are crossed, the referee should determine the average difficulty of the hour's period. Add the applicable costs of the major terrain type crossed in each 10-minute period, then divide by 6. This number is added to any other modifiers (atmosphere, encumberance, etc.).

Modifiers are cumulative. A character from a Dense atmosphere environment (not acclimated to higher altitudes) travelling up a steep slope in a Very Thin atmosphere (without oxygen) while carrying a heavy load expends 6-1/2 points of Endurance each hour.

VEHICLES IN THE MOUNTAIN ENVIRONMENT

Most ground vehicles are of little use in an attempt to reach the summit of a mountain; terrain difficulties usually make this impossible. Basically, ground vehicles being used in mountains are subject to normal considerations, both of rules and of common sense. This means that a cliff or a crevasse is likely to stop a vehicle; so will a rise of more than 30° slope.

Grav vehicles and air craft are not, of course, affected by these same considerations. Nonetheless, use of such vehicles is not always advisable; air turbulance around mountains makes conditions near mountains range from difficult to well-nigh impossible. The result is a fairly strong chance of suffering a **mishap** while piloting such a craft, whether it is an individual's grav belt or a space-going small craft.

When a vehicle is being flown in the vicinity of a mountain, a base chance of mishap exists: 7+, rolled every 10 minutes. This is only a problem when the craft is fairly near the mountain; still, it's safe to say that any close-in maneuvering, including attempts to take off or land, will take up to 10 minutes each. An intensive search or rescue operation will take much more time.

Various modifiers are applied to the basic mishap roll, as outlined below:

DM-skill of pilot/driver (choose appropriate skill type).
DM+1 per 10 kph of speed attempted (i.e., base chance when moving up to 10 kph is **automatically** decreased to 6+).
DM+1 per kph of wind speed (see the High Wind event section for wind speed calculation). Wind is normally less than 10kph, and not a major factor.
DM+6 in a storm or blizzard.
DM+2 if vehicle is an aircraft.
DM+3 if vehicle is a helicopter.
DM-1 per ten full tons of vehicle tonnage (for **Striker** vehicles, divide vehicle weight by 15 to derive tonnage). Vehicles less than ten tons, or grav belts, do not get a favorable DM.
DM-2 if vehicle is a spaceship or small craft, in addition to weight modifier.

The exact effects of a mishap will depend upon the vehicle, the weather, and other factors. The referee should consider drawing up a specific encounter table for use with vehicles around a particular mountain; possible mishaps that might occur could range from blizzards, lightning strikes, or mechanical failures to sudden updrafts or downdrafts which could sweep the craft into a nearby mountain wall. Specific suggestions for events of all sorts are offered elsewhere in this booklet.

Mountain Terrain

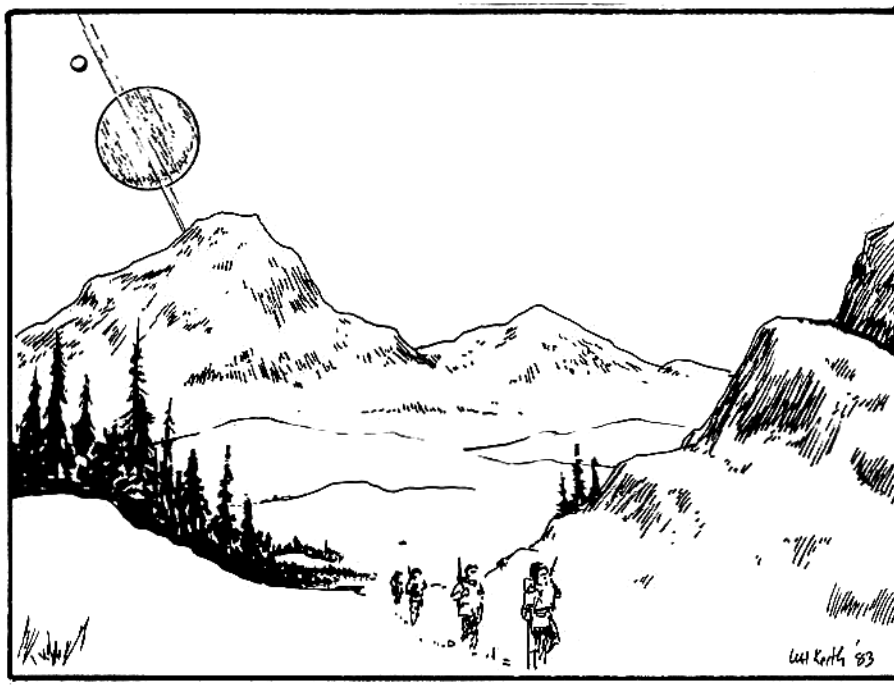
In representing a mountaineering expedition, it is necessary to have on hand enough information on terrain to permit a party of adventurers to pick a path from the base of the mountain to the summit. Climbers usually employ topographic maps, with contour lines to show the shape, height, and slope of terrain; they also, of course, have the added advantage of being able to see the terrain in question, and thus choose the best route possible for the party.

Topographical maps do not work well in the context of a Traveller adventure, except where the referee has the time, the skill, and especially the space to construct a really detailed one. For most purposes, though, it is possible to assemble enough detail without going into the complexities of exact cartography.

THE APPROACH

The first step in putting together a mountain to conquer is to set up the approach — the country around the mountain. Is the terrain a desert or a jungle? Is the peak isolated, or part of a chain? Does it rise from sea level or nearly so, or is it thrust up from a high plateau?

As the picture begins to fall into place, certain specifics should be filled in. Determine the atmospheric pressure at the base of the



mountain; then determine the temperature there — these will be essential facts. Determine some basic facts about weather, as well — is the area arid, or wet? from what direction does the weather come? will that weather tend to be warm, wet air masses or cool dry ones, or a mixture of the two? If the locale is to have seasonal variations in climate, figure these out, too . . . although the climb will probably only occur once for any given group of Traveller characters, it's best to work out where glaciers and permanent snowfields can be found based on a logical picture of the climate, not on haphazard guesses; additionally, another group might attempt the climb in a different season. Details of the approach — specific terrain types and encounter tables that will appear — are left up to the referee to work out. Don't forget that, on a planet where civilization hasn't crept too far, the trip to the base of the mountain can constitute a whole adventure or series of adventures in itself.

THE MOUNTAIN

From the base, attention is turned to the summit of the mountain. Just how high is it? Once the referee has determined this fact, several others fall into place — the air pressure and temperature on the peak being the first items. Once this is known, the 'timber line' (the boundary at which most large plants no longer grow — in this text, the altitude where the temperature never rises above Ø°C) and the 'snow line' (where snow may be expected to fall in winter) can be set. The snow line is of importance only if a winter climb is to be made; the timber line, however, is always important, for it marks the point where glaciers and snowfields will occur, and has a bearing on animal encounters as well.

With these facts known, it is time to produce a visualization of the rest of the mountain. This can be done off the top of the head, if the referee so desires, but it is often better to introduce random factors to make the mountain somewhat more natural in appearance and challenge. A series of die rolls and tables are provided to show some of the possibilities.

The Summit: Starting at the summit of the mountaifn, the referee should roll 1D+2, for a result between 3 and 8. This is the number of 'faces' to the summit, each of which may be a different terrain type, offering various advantages and disadvantages for a climbing party.

Roll on the Summit Approach table (found to the right) the appropriate number of times to produce the actual nature of each face. The resulting terrain types show the predominant terrain for a 250-meter drop in altitude below the summit. Other terrain may be mixed in, but this will be shown on event and encounter tables, and need not concern the referee at this time.

SUMMIT APPROACH
(1D+2 faces)

Roll	Face
1	Slope
2	Wall
3	Ridge
4	Arete
5	Buttress
6	Slope

Multiple Summits: A mountain may have one or more summits — 2 and 3 summit mountains are, in fact, quite common. To create mountains of this type,

determine the altitude at the top of each one normally (they may be — probably will be — different). Work down from each summit normally, as explained in these rules.

At each altitude level below the level of the lowest of any pair of summits, the two peaks may be connected by a ridge or arete. When either of these terrain types appear simultaneously at the same altitude and facing one another (even roughly speaking), they will connect on a roll of 7+. If they connect, there is no slope along the length of this ridge; it is constant in altitude between the two peaks, effectively a slope of Ø°.

From Summit to Base: For each of the faces obtained above, the referee may now determine the terrain leading to it. Each terrain type has specific characteristics that will help determine the appropriate adjacent terrain. As before, the interval covers roughly 250 meters in altitude (for extremely tall mountains, referees may wish to use an interval of 500 meters — if so, remember to adjust all of the other factors accordingly).

As each piece of terrain is determined, the referee should make a rough sketch map of the mountain, filling in each terrain type as it comes up. Each feature should be clearly numbered or otherwise labelled, to facilitate later description and/or keying of special tables or features to that specific terrain type.

The process is repeated for each level, until the base of the mountain is reached. It should be noted that, when a particular approach is identical to the terrain determined to be above it (a ridge leading to a ridge, a wall below a wall, etc.), this merely denotes an especially large surface of the indicated type.

Filling in Detail: Once the mountain has been mapped, details can be filled in. Below the timber line, vegetative cover, lakes, streams, and the like can be added; anomalies can be cleared up or explained. A few notes on each feature, keyed to the map, can also be made; if desired, specific event tables can be constructed for some or all of these features, as the referee feels the necessity.

The slopes of individual features should be determined; if desired, the number of pitches and the difficulty of each (on the 1-5 scale described previously) can also be determined in advance. In general, the referee can set out the whole mountain in as much detail as desired before the climb begins. If the mountain is near a relative center of civilization, or is a popular target for climbing parties, it will likely be extensively mapped, and such maps would likely be available to the characters involved in the climb. These maps allow the players to make judgments on their approach, avoiding obstacles or potential hazards through careful planning.

Traversing on the Map: Traverse (sideways) movement on the map is possible. A slope from one feature to another on the same level can be determined according to the procedures outlined on the tables below. For example, a ridge or arete has one lower face, and two side faces, both slopes; the side faces lead into the adjacent terrain types shown.

Distance can be calculated essentially at random. To move from one face to an adjacent face at the same altitude, take 2Dx100 meters (with appropriate modifiers for slope) as the effective distance to be moved.

THE FACES OF THE MOUNTAIN

SLOPE: A face rising more or less gradually — roll to determine the degree of slope. A slope has three lower faces automatically; roll once per face for type.

DEGREE OF SLOPE

Roll	Slope
1	Gentle (30°)
2	Moderate (45°)
3	Moderate (45°)
4	Steep (60°)
5	Steep (60°)
6	Steep (60°)

LOWER FACES

Roll	Face
1	Slope
2	Wall
3	Ridge
4	Arete
5	Buttress
6	Glacier/Chute

WALL: A face which takes the form of a cliff — roll to determine type: 1 — the wall is Sharp (75°); 2-4 — the wall is Sheer (90°); 5-6 — the wall is an overhang. If the wall is an overhang, roll once for the degree of tiltback — if a roof is indicated, roll again for the degree of tiltback up to that point (it is possible for a wall to have several roofs). A wall has only one lower face — roll once for type of face; if the result is Ridge/Arete, roll 1D: on 1-4 it is a ridge, on 5-6 an arete.

TILTBACK DEGREE

Roll	Tiltback
1	Tiltback (105°)
2	Tiltback (105°)
3	Tiltback (105°)
4	Severe (120°)
5	Severe (120°)
6	Roof* (135°+)

LOWER FACE

Roll	Face
1	Slope
2	Wall
3	Wall
4	Ridge/Arete
5	Buttress
6	Glacier/Chute

On walls, a given portion of the face is called a pitch. A 250 meter tall shev or wall will have one or more pitches; the number of pitches present is determined by rolling (1D+1)/2 — round fractions up — add 1 to this number for each roof on the face. Divide the result into the overall height of the section of wall, to determine the average height of the companion pitches on that face. The average height of a pitch may be varied by (1D/2)x10 meters, plus or minus — this amount adjusts the height of a companion pitch.

Difficulty level for each pitch should be determined individually. Pitches are rated in difficulty between 1 and 5; the level of difficulty for the first pitch on a wall that is not a continuation of a previous wall is determined as (2D-2)/2 — round fractions down, but treat a result of 0 as 1. Modify the base for the following conditions:

-2 to difficulty level if the face is Steep (60°).
-1 to difficulty level if the face is Sharp (75°);
+1 to difficulty level if the face is a tiltback;
+1 to difficulty level for each roof on the face;
+1 to difficulty level* if the face is snowy (not possible if the face is Sheer or a tiltback);

+2 to difficulty level* if the face is icy in spots;
+3 to difficulty level* if the face is verglas (see **Special Encounters and Events**);
+4 to difficulty level* if the face is completely ice-covered.

For each additional pitch on the face, roll **1D**: 1-2, the next pitch is 1 level less difficult than the last; 3-4, the next pitch is the same as the last; 5-6, it is 1 level worse than the last. The maximum difficulty level for a pitch which has not been adjusted for adverse conditions is 5; treat any final result of Ø or less as 1. Adverse condition modifiers should be added after the base difficulty level of the individual pitch is determined; these are marked with a star above. Pitches should be counted down from the top of the mountain when developed, working from the highest pitch on the face to the lowest.

If the face is a continuation, the difficulty level for the first pitch is developed from the level of the last or lowest pitch on the previous face. Normally, information on pitches is developed only for walls, but the referee may choose to develop pitches for any face with a Steep slope (60°).

RIDGE: A long, relatively narrow hump — roll once for the degree of slope. A ridge has three lower faces, two of which are always slopes, and are treated as such — roll once for the type of the third face.

DEGREE OF SLOPE

Roll	Slope
1	Gradual (15°)
2	Gentle (30°)
3	Gentle (30°)
4	Moderate (45°)
5	Moderate (45°)
6	Moderate (45°)

THIRD FACE

Roll	Face
1	Slope
2	Wall
3	Ridge
4	Arete
5	Buttress
6	Glacier/Chute

ARETE: A form of ridge, but even narrower and more pronounced — roll once for the slope of the arete. Like a ridge, an arete has three lower faces, two always slopes, but more severe — roll 1-3 for Steep (60°), 4-5 for Sharp (75°), 6 for Sheer (90°) — roll once for the third face.

DEGREE OF SLOPE

Roll	Slope
1	Gentle (30°)
2	Moderate (45°)
3	Moderate (45°)
4	Moderate (45°)
5	Steep (60°)
6	Steep (60°)

THIRD FACE

Roll	Face
1	Slope
2	Wall
3	Ridge
4	Arete
5	Buttress
6	Glacier/Chute

BUTTRESS: A blunt, wide ridge, a rock outcropping thrust out from the mountain — roll once for the slope of the buttress: 1-4 is Moderate (45°), 5-6 Steep (60°). A buttress has 1D lower faces — roll to determine each face on the table to the left; if a slope results, roll once for degree of slope: 1-4 is Moderate (45°), 5-6 is Steep (60°).

THIRD FACE

Roll	Face
1	Slope
2	Wall
3	Ridge
4	Arete
5	Buttress
6	Glacier/Chute

GLACIER/CHUTE: Two forms of essentially the same feature. A **glacier** is a river of ice which advances down a mountainside under the weight of accumulated ice and snow from above (or retreats if melting proceeds faster than buildup). A glacier should be treated as a ridge for purposes of slope. Like a ridge, it also has **three** lower faces; of these faces, two are rolled on the second table below, the third on the third table — note that the faces determined on the second table will normally be faces **above** the level of the glacier (an exception to the usual rules); they are set up as usual, but form a transition into terrain already determined.

GLACIER SLOPE

Roll	Slope
1	Gradual (15°)
2	Gentle (30°)
3	Gentle (30°)
4	Gentle (30°)
5	Moderate (45°)
6	Moderate (45°)

UPPER FACES

Roll	Face
1	Upward Slope†
2	Wall (upward)
3	Wall (upward)
4	Ridge (above)
5	Arete (above)
6	Upward Slope*

THIRD FACE

Roll	Face
1	Slope
2	Wall
3	Ridge
4	Arete
5	Buttress
6	Glacier/Chute

† — Roll degree: 1-4, Moderate (45°); 5-6, Steep (60°).
* — Roll degree: 1-2, Gentle (30°); 3-5, Moderate (45°); 6, Steep (60°).

A **chute** is placed if a glacier can not be, due to the temperature (glaciers can only occur above the timber line of the mountain). Chutes are set up using the same tables as glaciers; they are basically valleys which lead upward into the mountain. Chutes are level at the altitude of their base; they modify the lower level of the feature above to match. Chutes extend for a distance of 250 meters on each face for which they are indicated.

GROUND TRAVEL: Distances covered by ground travel are not the same as distance in altitude gained. The chart to the right reflects the total amount of ground distance to be covered, depending on the angle of the given slope. All distances are average — the referee should feel free to alter them in specific cases by up to +/- 20%.

GROUND TRAVEL

Slope	Distance
Gradual (15°)	800 meters
Gentle (30°)	550 meters
Moderate (45°)	400 meters
Steep (60°)	300 meters
Sharp (75°)	250 meters
Sheer (90°)	250 meters
Mild Tilt (105°)	250 meters
Severe Tilt (120°)	250 meters
Per Roof	+50 meters

PRESSURE AND ALTITUDE

The atmospheric envelope surrounding any planet is thickest at the world's surface, and decreases in density the further from the surface one gets. The irregularities of a world's surface cause mountains and valleys to form; where these features are of significant size, air pressure will be noticeably different.

A base line for the measurement of a planet's atmospheric pressure is always set. This is the Surface Level pressure. On planets without water, surface level is calculated as being the level, within +/- 100 meters, at which the greatest fraction of the planet's surface area lies — this being determined by survey . . . in effect, the referee may set this base line as desired. Planets with water traditionally calculate Surface Level pressure at the top of the planet's oceans — at 'sea level' — a practice which began on both Terra and Vland in pre-spaceflight times.

Surface level is always set at Ø. Altitudes are then calculated above (plus) or below (minus) surface level. Pressure increases below surface level, and decreases above it. The curve of pressure change is influenced by a number of factors, including the overall air pressure, planetary gravity, and temperature. The curve is not a smooth one, but pressure tends to build more rapidly the nearer the point in question is to the center of the planet. Thus pressure below surface level increases at a faster rate than does pressure above surface level.

Atmospheric pressure is measured in atmospheres (abbreviated atm), an absolute measurement not dependent upon factors that vary from planet to planet. The surface level pressure of Terra is 1atm, but other worlds may have quite different surface level pressures.

In **Traveller**, three surface level pressures are of interest for the purposes of this booklet. These bands represent the three broad categories of atmospheric pressure where breathing is possible for humans and similar races.

Thin or Thin, Tainted atmospheres have a surface-level pressure of between .425atm and .75atm. The average, roughly .5atm, is most commonly used for identifying a basic 'thin' atmospheric pressure. On Earth, this corresponds to the pressure encountered at an altitude of roughly 18,000 feet.

Standard or Standard, Tainted atmospheres have a surface level pressure in the range between .75atm and 1.5atm. Earth's sea-level pressure of 1atm is used as an average figure throughout this booklet.

Dense or Dense, Tainted atmospheres represent a surface-level of over 1.5atm. Although in theory breathable to fairly high pressures, a dense atmosphere generally will be less than 2.5atm; the average and common practice for this booklet is 2atm pressure.

The Atmospheric Pressure table shows how to calculate the pressure at various altitudes, depending upon the surface level pressure of the planet's atmosphere. Thus, on Earth, we read down the center column, and discover that .5atm pressure is found at 5.5km altitude. In similar fashion, we can find an altitude — say, 2.5km — and read across, noting that, in a Thin atmosphere, the pressure at that altitude is .4atm; in a Standard atmosphere, it is .8atm, and in a dense atmosphere, 1.6atm.

The shaded ranges show the limits of breathability, marked off by Thin, Standard, and Dense atmosphere ranges. Outside these safe zones, artificial assistance will be needed to avoid serious damage, and, ultimately, death.

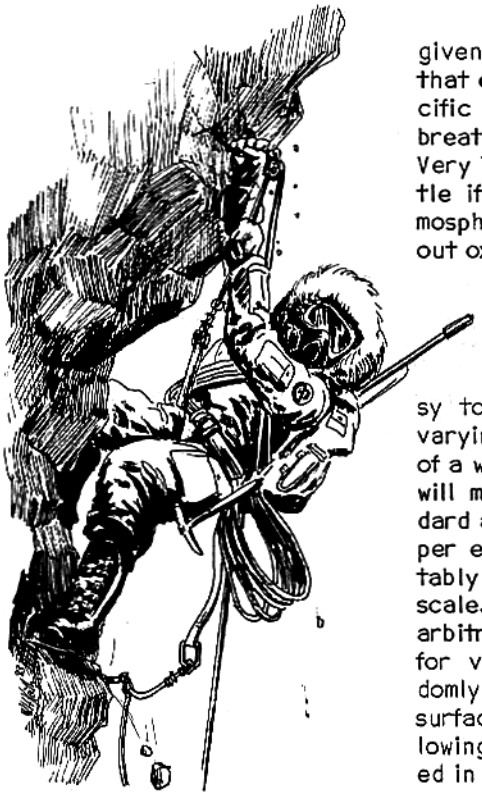
ATMOSPHERIC PRESSURE

Basic Altitude	Atmosphere Type at Surface Level		
	Thin	Standard	Dense
-1.25 km	0.75	1.50	3.00
-1.00 km	0.70	1.40	2.80
-0.75 km	0.65	1.30	2.60
-0.50 km	0.60	1.20	2.40
-0.25 km	0.55	1.10	2.20
0.00 km **	0.50	1.00	2.00
+1.00 km	0.48	0.95	1.90
+1.50 km	0.45	0.90	1.80
+2.00 km	0.43	0.85	1.70
+2.50 km	0.40	0.80	1.60
+3.00 km	0.38	0.75	1.50
+3.50 km	0.35	0.70	1.40
+4.00 km	0.33	0.65	1.30
+4.50 km	0.30	0.60	1.20
+5.00 km	0.28	0.55	1.10
+5.50 km	0.25	0.50	1.00
+6.00 km	0.24	0.48	0.95
+6.50 km	0.23	0.45	0.90
+7.00 km	0.21	0.43	0.85
+7.50 km	0.20	0.40	0.80
+8.00 km	0.19	0.38	0.75
+8.50 km	0.18	0.35	0.70
+9.00 km	0.16	0.33	0.65
+9.50 km	0.15	0.30	0.60
+10.00 km	0.14	0.28	0.55
+10.50 km	0.13	0.26	0.50
+11.00 km	0.12	0.24	0.48
+11.50 km	0.11	0.22	0.45
+12.00 km	0.10	0.20	0.43
+12.50 km	0.09	0.19	0.40
+13.00 km	0.09	0.18	0.38
+13.50 km	0.08	0.17	0.35
+14.00 km	0.08	0.16	0.33
+14.50 km	0.07	0.15	0.30
+15.00 km	0.07	0.14	0.28

Thin
Standard
Dense
Very Thin
Thin
Standard
Thin
Very Thin
Trace
Very Thin

** — surface level or sea level

This table assumes 'basic altitude' in a 1G field, with **Thin** atmosphere at 0.5atm surface level, **Standard** at 1.0atm surface level, and **Dense** at 2.0atm surface level pressures. For variations, see the appropriate rules.



Although exact pressures are given on the table, it is rarely all that essential to know what the specific pressure is — either you can breathe or you can't. If you're in a Very Thin atmosphere, it matters little if the pressure is .2 or .4 atmospheres — you're in trouble without oxygen, and that's that.

The precision in measuring pressure, however, is useful for some purposes. For example, it is very easy to supply local 'color' through varying the surface level pressure of a world within the given limits. It will make a difference if the 'standard atmosphere' world is at the upper end, the lower end, or comfortably in the middle of the pressure scale. Referees can set pressures arbitrarily (or have them furnished for various planets), or can randomly establish the pressure at surface level for a new world by following the simple procedure outlined in the paragraph below.

Find the lowest pressure falling within a given category on the chart. Roll 2D-2; move that number of bands up the chart (for Thin atmosphere worlds, the modifier should be 2D-4, instead) — a negative number requires a downward move.

The results of this throw give the surface level pressure to be used for the world. Where the atmosphere thus determined has moved out of the proper range (too low in Thin atmospheres, or too high in Dense ones), an unusual situation has occurred. The planet is, in fact, a mild version of the Type D or E atmosphere worlds described in Supplement 10, The Solomani Rim. Surface level pressure is not capable of sustaining human life, but settlements at a lower or higher point will enjoy the proper atmospheric type. This allows for this late addition to the **Traveller** rules to be incorporated into previously established worlds; it also can be ignored at will.

Once the surface level pressure is established, a table specific to the planet can be established to correlate pressure and altitude based on the specific surface figure.

PRESSURE AND GRAVITY

Gravity has a further influence on the process of determining altitude and pressure. A high gravity will tend to increase pressure and

compact the atmosphere; thus, the higher the gravity, the narrower the overall envelope of air around a world will be.

Effects of gravity can be calculated in two ways, depending on the desired information being determined. First, the specific **altitude** at which a given pressure occurs can be found; conversely, the specific **pressure** at any given altitude may be determined.

The Atmospheric Pressure table is set up to presuppose a 1G field, like Earth's. Gravity for any specific world can be calculated from the standard **Traveller** formula (shown at the right) where G_s is the planet's gravity, D is the planet's diameter in thousands of miles, and 8 is a constant which gives the proper relationship of Earth's size to that of the planet in question. To find an altitude when pressure is known, **multiply** pressure times gravity, and read the altitude equivalent to the resulting pressure. To find a **pressure** when altitude is known, **divide** altitude by gravity.

$$G_s = \frac{D}{8}$$

It is wisest for the referee to set up a specific Atmosphere Pressure table for each new world. This table can incorporate variables in surface pressure and in gravity from the very start, and may thus be used with minimal confusion or mathematical calculations when dealing with a given world's altitude/pressure relationships.

WEATHER

Weather patterns in mountainous regions vary enormously according to a variety of factors. Planetary climate patterns, local conditions, and special considerations of environment and terrain will all cause weather to vary from one climb to another (even the same mountain will be startingly different if seasonal differences are at all extreme). Thus, no simple set of rules can simulate changing weather to any degree of accuracy . . . and, since **Traveller** is not intended to require a degree in meteorology to play or run, more lengthy rules will also be avoided here. Those sufficiently knowledgeable and/or interested are invited to substitute more realistic simulations as desired.

To deal with climate and weather in a straightforward (if unrealistic) fashion, two basic facts must be determined from which all other considerations follow. These are temperature, and the base chance of precipitation.

Temperature can be determined in many ways. Often, the information is known as a result of given material on the planet, at least approximately (i.e., a planet that has been described as a desert is at least going to color the referee's thinking on the temperature, even if no exact data is given). In other cases, the referee may have the means to calculate (or arbitrarily predetermine) an appropriate temperature.

However it is established, temperature should always be set to reflect conditions at the base of the mountain. The section on **Pressure and Temperature** shows how to establish changes in temperature further up the mountainside.

The basic chance of precipitation is an even more vague factor, left largely up to the referee to establish. One good rule of thumb is to use the planetary hydrosphere number; rolling this number or less on 2D will indicate that precipitation will occur. However, a sense of local modifications is important. A desert on a planet with a 90% hydrosphere will receive less rainfall than a tropical jungle — and this should carry over as the referee establishes the conditions of the climb.

When Weather is Determined: The initial weather of a climb should be determined before the climb begins. Wise climbers (if they have a choice) will not begin their climb until conditions are within certain accept-able limits. However, it is not always possible to make such a choice.

Set the temperature, then roll against the base chance of precipitation. If the roll is less than the indicated throw, there is a threat of rain or snow. A roll equal to the number indicates that it actually is raining or snowing at the time the check is made. Throwing a number greater than the base chance means the day is clear, with little or no threat of trouble. All of this, of course, refers strictly to conditions at the base of the mountain.

Weather remains fairly constant, once it is set. Clear conditions remain in effect for as long as the group does not suffer a Weather Change result on the event tables; the same is basically true of the 'threatening weather' result, except that a roll of 8+, made once every 6 hours, will cause snow or rain to begin falling. Once precipitation begins, it will last for 2D hours; at the end of that period, re-determine the conditions using the Base Chance number. Note that this could lead to an immediately renewed period of foul weather.

Any time the Weather Change event is rolled, weather conditions are re-calculated.

Temperature: Sudden temperature changes are less frequent than cloudbursts. Temperature should remain relatively constant; however, when each Weather Change takes place, roll 2D; a 2 or 12 indicates that a temperature change will occur. A 2 is an increase, a 12 a decrease; roll 2 dice, multiply the results together, and divide by a factor depending on the current atmospheric pressure (Very Thin, 1.0; Thin, 1.5; Standard, 2.0; Dense, 3.0) to get the resulting temperature change.

Local Changes: The referee should not permit more than two dramatic weather change results in a day — i.e., temperature and precipitation should not change rapidly as a result of a difficult climb that requires several Event rolls. Instead, the referee can impose local weather problems on the party. These include winds, lightning, highly localized precipitation, and the like. These are explained in the Events section; they can be brought into play as the referee desires.

Night and Day: Temperature will vary between daylight and darkness. Though exact variations depend on local conditions, a good rule of thumb is to drop temperature by 10-15°C after the sun goes down. This drop is not abrupt — no more than a degree or two an hour under normal conditions. The same is true when morning comes and the temperature begins to climb once more.

Again, this is only a general rule. Alien worlds will vary widely in actual conditions, and the referee should fee free to set up unusual situations to give a better feel for adventuring on exotic worlds.

Rain and Snow: When precipitation occurs, the current temperature will determine the nature of that precipitation. Above 0°C, it will be rain; below 0°C, snow — right around the critical temperature (within a degree or two either way), the result will be a freezing rain. This causes conditions similar to those discussed for Verglas in the section on **Special Encounters and Events.**

When rain and snow are to occur, the referee should determine **severity** of the weather. Roll **1D:** 1-3 light, 4-5 moderate, 6 heavy (this can be changed for specific planets or regions of a planet, if desired).

Effects of Rain: When rain occurs, it can be an inconvenience; heavy downpours can be especially hazardous. Any face with a slope 60° or more, particularly walls, becomes extremely dangerous to climb, and cannot be negotiated at all without some sort of aid. Increase difficulty level of any pitch by the amount indicated for the severity of the rainstorm.

Light Rain: Light rain has no particular immediate effect. In the long term, light rain will cause discomfort. Each character should lose 1 point from Basic Endurance after spending an hour or more in light rain conditions. Increase pitch difficulty level by 1.

Moderate Rain: A moderate rain causes the same Endurance loss as light rain, and, in addition, halves all movement rates (including those for rock climbing). Increase pitch difficulty level by 2.

Heavy Rain: A heavy rain causes an immediate Endurance loss as soon as it begins. This, in turn, can cause further difficulties; if a heavy rain catches a party climbing, they must roll for accidents just as they would if one were wounded. In addition, movement costs and Endurance loss rates are all doubled in heavy rain. Increase pitch difficulty level by 4.

Lightning: Lightning is frequently associated with moderate or heavy rain. As mentioned above, lightning is a good event to implement if too many Weather Change results occur during the space of a single day. Lightning is covered full in the Events section.

Effects of Snow: Snow causes less of a problem for parties in terms of personal inconvenience, but has more abrupt and severe effects on travel. Also, because snow accumulates, even a light snowfall can be a major problem if it lasts long enough.

A Snow Accumulation level should be tracked as snow continues. It is the current Accumulation value which determines the major effects of snow. Light snow increases the value by 1 per hour, moderate by 3, heavy by 5.

Accumulation values of 1-6 reduce movement rates by 1/2. Levels 7-15 reduce movement to 1/4. A 16+ makes travel on foot virtually impossible.

Snow also causes all terrain (except steep slopes) to assume the characteristics of a Permanent Snowfield until the temperature rises

above 0°C and melting begins (at a level of 1 level of accumulation per hour per 2°C rise in temperature above 0°C).

Whiteout: Whiteout is a phenomenon covered in the Events section. It is associated with moderate or heavy snow as lightning is with rain.

Wind: In addition to its effect on vehicles (see **Vehicles in the Mountain Environment**), high winds cause the Wind Chill Factor to come into effect. This is a phenomenon which makes the **apparent** temperature drop below the **actual** temperature, according to the force of the wind.

Ordinarily, wind is not a significant enough problem to track constantly. On occasion, as directed by Weather events, an especially high wind will be called for. In this case, determine the wind speed as indicated by the event description and then consult the Wind Chill table, below.

WIND CHILL

Wind Speed (kph)	Actual Air Temperature in °C					
	0° C	-6° C	-12° C	-18° C	-24° C	-30° C
16	-7°	-16°	-22°	-29°	-37°	-43°
24	-11°	-20°	-27°	-35°	-43°	-51°
32	-14°	-22°	-31°	-40°	-47°	-56°
40	-17°	-25°	-34°	-43°	-51°	-61°
48	-18°	-27°	-36°	-45°	-53°	-62°
56	-19°	-28°	-37°	-47°	-56°	-65°
64	-19°	-29°	-37°	-48°	-57°	-66°

Effects of Low Temperatures: When the apparent temperature drops to -10°C, frostbite of unprotected body parts sets in. Cold Weather Clothing is rated in terms of insulation value, adding a set value to the apparent temperature. Thus, if the wind chill temperature is -50°C, and a character has on clothing providing an insulation of 60°C, the apparent temperature will be +10°C, and the character is safe from freezing (assuming all body parts are covered).

Frostbite may affect individual extremities. Insufficiently protected hands and feet will become numb and useless, and the character suffers 1D damage points every 10 minutes until the cold weather effects are negated.

Characters cannot wear clothing that would raise their apparent temperature above +30°C. without discomfort. Extra clothing must be carried, or heatsuits with internal thermostats must be used. See the Equipment section.

PRESSURES AND TEMPERATURE

The lower the air pressure is, the more quickly heat is radiated from a surface. This means that the temperatures at high altitudes will be much lower than those found at lower altitudes.

At its most basic level, this phenomenon is expressed in a 'lapse rate' (temperature reduction) of 1°C for every 200 meters of altitude gained. Thus a point 1km above surface level will be 5°C cooler than the surface level temperature, on the average.

Actually, lapse rate varies somewhat. To allow variability based on environmental conditions, a simple process can be applied by the referee. Since wet air cools more slowly than dry air (but by no means in any set, automatic fashion), two factors can be taken into account in production of a variable. One is a constant — the likelihood of the planet to have wet air masses, based, in its simplest form, on the planetary hydrosphere. The second is random — a roll of 2D-2. Take the average of these two numbers; the result, in tenths of degrees C, is added to the 1°C standard lapse rate. Thus, a planet with an 80% hydrosphere (8), a modified roll of 4 will produce a modified lapse rate of 1.6°C per 200 meters ([8+4] / 2 = 6; 1 + .6 = 1.6°C).

The referee should feel free to vary the 'constant' for local conditions. For example, if the mountain is in the midst of a desert, the planetary hydrosphere figure should be ignored in favor of some low figure. It may even be of interest for the referee to calculate, in some fashion, local humidity, rather than always using the hydrosphere figure — though this is the most convenient way to deal with local conditions without getting too bogged down in complexity.

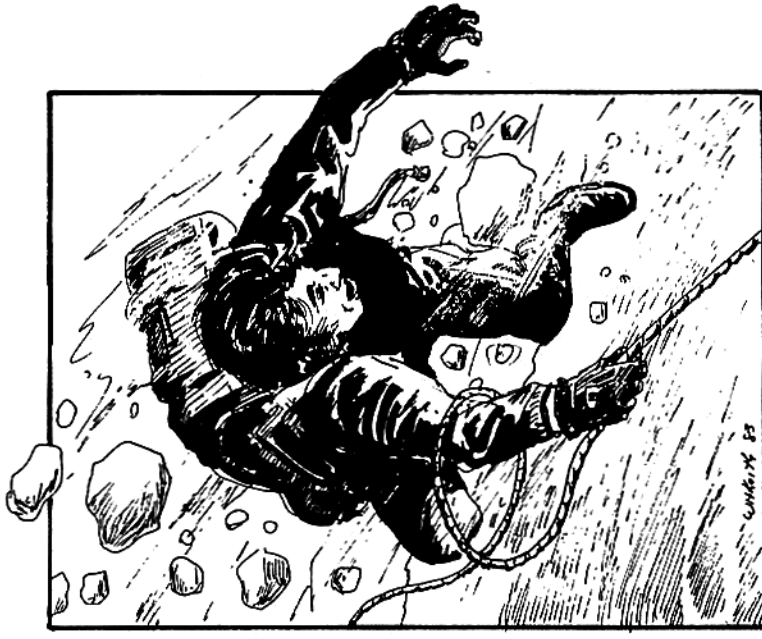
It is the lapse rate that explains how a mountain in the tropics may have snow on it. Sea level temperature may be 35°C in a tropical city at the base of a mountain; at the top of that mountain, 10km above sea level, the temperature is a frigid -15°C.

Once the nature of terrain is determined, the referee can embellish that terrain with any of a number of special terrain features or other hazards. Some of these should be deliberately established by the referee as part of the basic terrain; others can be installed in encounter and event tables created for the terrain in question.

Roof: An overhanging obstacle projecting from a WALL. Roofs are explained under WALLS in the section on **Mountain Terrain.**

Ledge: A ledge may also be found along a WALL. Such a ledge may allow characters a narrow path along the side of the wall. Movement along a ledge is at 1/4 normal rates. There is a basic chance of 8+ that any given ledge will have a weak spot that will give way under a character's weight (usually, but not always, the first one to step there).

Rockfall: Rockfalls are common on WALLS, STEEP SLOPES, or on terrain below such features. In a rockfall zone, rocks — varying in size from gravel to boulders — may occasionally plunge down from above. Probably the best way to simulate the variables of a rockfall situation would be to roll 1D to determine the number of dice damage a character will suffer if hit by a rock. The character should be permitted a throw of Dexterity or less to dodge a rockfall; if the character fails the throw, or is currently engaged in climbing (which would make dodging difficult), the rock hits on a roll of 8+ and inflicts the indicated damage.



Verglas: A condition affecting climbs on WALLS or STEEP SLOPES. Verglas is a condition in which frozen water causes a rock face to become extremely slippery and hazardous. It occurs only above the snow line; when encountered, verglas negates the characters' Rock Climbing skill; Ice Climbing skill is used as a favorable DM instead whenever verglas is found.

Snowfield: A snowfield is an extensive blanket of snow. Snowfields are found in any conditions where snow is possible (through suitable temperature weather patterns), and the slope of the ground is no more than 45°. Crossing snowfields is a task calling for ice climbing skill. A snowfield should be treated as an extra terrain type, which may in turn conceal other hazards.

Cornice: A lip of snow extending beyond the edge of a steep slope or wall. Cornices can form on almost any sort of terrain. The danger of the cornice, of course, is the fact that it is hard to tell where a character can walk unsupported. If a cornice event occurs, the lead character of a party must roll Intelligence or less (DM-Mixed or Ice Climbing skill) to spot the danger. Failure of the roll results in a mishap and a potential fall for that character.

Crevasse: A crack in a GLACIER. Crevasses are among the greatest dangers of glacier travel, and offer a variety of different problems to be overcome.

When a Crevasse result occurs, the referee should roll 1D; this gives the number of roughly parallel crevasses encountered. A second roll of 2D establishes something of the position of the crevasses. An 8+ indicates that the party must travel parallel to them; otherwise they run across the party's planned path.

In the first case, the crevasses pose no particular hazard... unless the party is forced by further encounters or events to deviate from their planned course (it should be noted that the referee and players must determine which direction the crevasses are in relation to the party). Crevasses should remain a danger for 2D×25 meters beyond the first point at which they are encountered (unless the glacier comes to an end first, of course).

If the party must move parallel to crevasses, cornices are added to the possible events which may be encountered.

A party faced with the need of crossing crevasses has more severe problems. A detour can be attempted; roll 2D×25 meters to determine how far the party needs to divert its course. However, if the roll is 11+, it proves virtually impossible to go around the crevasses (due to other obstacles, etc.); crossing them becomes mandatory.

A bridge of ice or snow may exist across a crevasse. This may be solid enough to hold a character; each character making a crossing should throw 6+ (DM+Ice Climbing skill) to cross without mishaps occurring. A bridge of this type will be discovered on a roll of 9+ in summer, or 6+ in winter (summer and winter referring to seasonal temperature extremes — but remember that the temperature will not actually rise much above Ø°C on glacier terrain).

Finally, a cornice will be encountered by parties approaching a crevass to cross it on a roll of 8+ (DM-Ice Climbing skill). Naturally, all of this means there are frequent chances for mishaps when dealing with crevasses. It is entirely possible for crevasses to defeat a climbing party, forcing them to find an alternate route.

Col: A col is a shallow, rounded pass through a mountain ARETE or RIDGE. When encountered, a col interrupts the ordinary slope of the ridge. It is 1D-1x25 meters lower than the ridge at its lowest point. The slopes of a col are relatively shallow; roll 1D — 1-3 Gentle (30°), 4-5 Moderate (45°), 6 Steep (60°). A col should always be established prior to a climb, and should never occur on an actual event table — cols are easily spotted by the most cursory of examinations.

Notch: A notch is virtually identical to a col, but much more of an obstacle. Depth is (1D-1)x50 meters; side slopes are determined by using 1-2 Moderate (45°), 3-4 Steep (60°), 5 Sharp (75°), 6 Sheer (90°).

Gendarme: A tower or pinnacle occuring on RIDGE or ARETE terrain. A gendarme rises straight up, with sheer sides; in some cases, it will block progress on foot and force a difficult traverse procedure by the party. On a ridge, a gendarme blocks the route on a roll of 1-2 on 1D; on an arete, the roll is 1-4. When a gendarme occurs, an automatic roll of 8+ will establish either a cornice or a weak ledge which can trap the unwary climber attempting to avoid the obstacle.

Aiguille: A more imposing version of a gendarme, the aiguille automatically blocks an arete, and blocks a ridge on a roll of 1-4.

Serac: A serac is a large block or tower of ice often found on GLACIER terrain. Highly unstable, a serac can topple as a party passes by on a roll of 10+. If it does so, treat it as a Rockfall situation.

Scree Slope: A scree slope is any SLOPE covered by small rocks and debris. When climbing any scree slope, speed is reduced to 1/4 of normal rates.

Suncups: Suncups are irregular depressions in ice or snow, found in SNOWFIELD or GLACIER terrain. They are formed by uneven patterns of melting when the surface is exposed to sunlight. Movement in an area where suncups are present is reduced by 1/3.

Boulder Field: A boulder field, as its name indicates, is an area where a variety of large rocks have accumulated. On a RIDGE or ARETE, they may hinder progress, blocking the route on a 1D roll of 1-3 on a ridge, or 1-5 on an arete. In other terrain, a boulder field may be skirted, but the detour consumes 1Dx20 meters. Movement through a boulder field is made at 1/4 the usual movement rate.

If for any reason a party attempts to move through a boulder field, each individual must throw a 6+ (DM+Mixed Climbing skill) to avoid a mishap. Avoiding a boulder field blocking a ridge or arete may cause the party to be forced into a difficult traverse.

The referee has the option to throw for an additional event any time a party chooses to detour around a boulder field, thus forcing a party, in some cases, to make a choice between two evils.

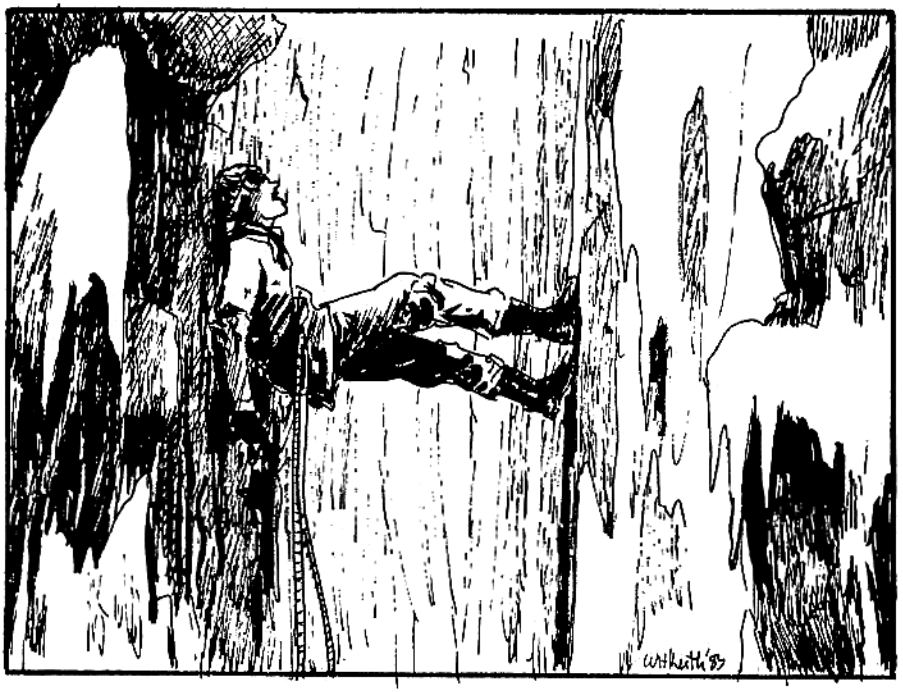
Moraine: A moraine is a form of boulder field found only on GLACIER terrain. Moraines are much less stable; the throw to avoid mishap in a moraine is 9+. Otherwise all provisions of boulder fields hold true.

Avalanche Zone: An avalanche zone exists at the base of snow-covered SLOPES designed as moderate or worse. Potential avalanche zones should be designated in advance of a climb (or in the wake of any snowfall which causes an accumulation of 8+ — see **Weather**).

An actual avalanche is a relatively rare spontaneous occurrence; roll once when a party enters an avalanche zone, with an 11+ indicating that an avalanche occurs. Additional rolls, however, must be made each time a loud noise (a gunshot, a shout, etc.) occurs.

When an avalanche takes place, each character in the avalanche zone may attempt to roll Endurance or less to sprint to a point of relative safety. Those who fail the throw suffer 1Dx1D damage. There is also a good chance (roll 10+ to avoid) that they will be buried in snow, requiring rescue. Characters buried in this fashion will suffer 1 point of damage per round until dug out, from cold, restricted air supply, and the like. It takes 1D rounds to locate, and 2D rounds to dig out, a character trapped in this way. Divide the time by the number of rescuers.

Chimney: A chimney is a place where two rock segments come close enough together to permit an individual to use the rock on either side for leverage. Chimneys are found, primarily, along WALLS, though any sheer face may include a chimney. If one is present, 1D can be subtracted from the difficulty dice result for every two levels of Rock Climbing skill of a character climbing the face.



Caves or Caverns: Caves offer, for the most part, a diversion from the climb — plus obvious possibilites for shelter (assuming no rudely awakened tenants dispute the matter) and storage of supplies. The referee can determine the size, extent, and other aspects of caves as they are encountered.

Landslide Zone: A landslide zone is much like an avalanche zone, but the occurrence is much less frequent, and the danger is from rocks and debris, rather than from a tidal wave of snow. The basic parameters for a landslide zone are the same as those for an avalanche zone, save that snow cover is not necessary; a roll of 9+ made for each area fitting into these parameters indicates that the area actually does suffer from occasional landslides.

Landslides actually occur according to the same procedures as avalanches. When they occur, each member of the party who cannot reach a safe haven takes 2Dx1D damage from falling and rolling rocks.

Boulder fields may be placed at the base of slopes indicated as landslide zones, both as a clue for the party and as an additional obstacle to be overcome.

Weather Change: This general event indicates that some weather-oriented problem or condition has taken place. See the **Weather** section for details. When the result occurs, determine (in some random or arbitrary fashion) whether the result is a dramatic change in conditions (the appearance of threatening clouds, for example), or a change in temperature, or the occurrence of some specific phenomena such as lightning, whiteout, high winds, and so forth. Some specifics are described below.

High Wind: If high wind is the weather change which occurs, roll 2Dx5 to determine the wind speed in kph. This will affect wind chills in low temperature situations; it also should increase the difficulty dice result of a wall climb by an amount equal to the wind speed divided by 10. Winds remain high for 2D hours.

Lightning: Lightning is a great hazard to climbers. It can occur any time weather is already indicated as being 'threatening'. If lightning occurs, each character has a slight (roll 11+) chance of being hit. DMs applied include DM+3 if located on a ridge, arete, buttress, or summit; DM-2 if near a wall, steep slope, large boulder, or other high object; DM-Mixed Climbing skill, DM+2 if rain is falling. Lightning rarely occurs in snowy conditions.

If lightning hits a character, damage is figured at 2Dx1D points. This can result in anything from a comparatively mild shock to certain death.

Whiteout: Whiteout is a phenomenon associated with snowy conditions — occurring either during moderate to heavy snows, or as a result of high winds sweeping across a snowfield. In whiteout, visibility is reduced nearly to zero. Whiteout will last for as long as the conditions producing it remain unchanged. Forward progress in whiteout conditions is impossible.

To the right may be found a typical event table. Each time a new terrain type is entered, or every two hours, a roll of 8+ (with Mixed Climbing skill as a negative DM) will cause an event to occur. A roll of 2D establishes the particular event scheduled to occur. When building the table, **Equipment Failure** and **Weather Change** should be at the two extremes of the table. **Animal Encounter** (directing the referee to a conventional animal encounter table) should occur one or more times in the center of the table. Other results can be placed as desired, and should be varied within the range provided in the **Terrain Event Summary** below.

RIDGE TERRAIN
(below timber line) 8+

2	Equipment Failure
3	Equipment Failure
4	Gendarme
5	Gendarme
6	Aiguille
7	Animal Encounter
8	Animal Encounter
9	Boulder Field
10	Boulder Field
11	Weather Change
12	Weather Change

TERRAIN EVENT SUMMARY

Terrain Type	Possible Events	
Summit†	Snowfield	Cornice
Ridge†	Boulder Field Snowfield Col* Aiguille	Gendarme Cornice Notch*
Arete†	Cornice Aiguille	Gendarme Notch*
Buttress†	Boulder Field Snowfield	Cornice
Slope†	Avalanche Zone (Moderate+) Landslide Zone (Moderate+) Snowfield (not Steep+)	Scree Slope Verglas (Steep+) Rockfall (Steep+)
Wall†	Rockfall Roof Ledge	Verglas Chimney
Glacier†	Moraine Crevasse Cornice (with Crevasse only)	Serac Suncups
Chute†	Avalanche Zone Landslide Zone	Rockfall
Snowfield†	Boulder Field As for base terrain	Cornice Suncups

* Events marked in this fashion should never be placed in a random event table, but should be visible to character as they approach the mountain.

† All terrain types include Weather Change and Equipment Failure.

Equipment

A wide range of equipment may be applicable to operations in a mountainous area, either for direct use in climbing, or as support or survival gear. The section that follows covers a number of these items.

BASIC MOUNTAINEERING GEAR

Basic mountaineering gear includes all those items actually used by climbers in various situations.

It should be noted that little detail is spared in this section for many of the vital but highly specialized pieces of small gear used in mountaineering. Thus one will not find carabiners, chockstones, runners, chock loops, expansion bolts, or the various specialized types of piton available to contemporary climbers. The reason? — just as the rules cannot afford to deal with the chance of discovering each foothold or projecting clump of grass, neither can they deal with each of these small items in detail. And players should not be forced to worry about whether a chockstone, an expansion bolt, or a piton makes the most sense in a given situation. If their characters have climbing experience, they'll know what to use, and they'll not be likely to misuse the equipment — hence the benefits in speed and safety granted to those with skill.

Instead of covering all these items, the climbing gear that is covered is either very important, very useful, or otherwise of special interest. Any item of minor gear not specifically covered is assumed to be part of the **Mountaineer's Kit.**

Mountaineer's Kit: A general collection of useful gear which is applicable to most mountaineering situations. It includes any type of equipment **not** specifically described elsewhere which would customarily be used by climbers, in sufficient quantities to be used on a climb of average difficulty. If a more difficult climb is undertaken, a character should have two of these kits to provide backup gear.

Tech Level = 4+. Reliability: tech level. Weight: 2kg (the kit includes a carrying bag which fits into a backpack or rucksack as needed). Cost: Cr 100.

Rope: Rope is the single most important element of a climber's equipment. A variety of types and sizes are available; in general, however, they are all similar in reliability and price within any given tech level. Rope equivalent to that available at the next higher tech level may always be acquired, but at double indicated cost.

The amount of rope to be required depends upon terrain and the speed of ascent. Enough rope must be present to allow hoisting or

climbing up the tallest pitch to be encountered on the climb; if the minimum amount is present, only one person or load may be hoisted at a time. Extra rope allows multiple ascents, and provides backups as desired. However, individual rope lengths of 60 meters or more become difficult to handle.

Tech Level = 1+ (rope is available in almost all cultures yet discovered). Reliability: tech level. Weight: 3kg per 10 meters at TL5; increase by 1kg per 10 meters per tech level below 5, decrease by .5kg per 10 meters per tech level above 5. Cost: Cr20 per 10 meters at TL5; increase cost by Cr3 per tech level below 5; decrease by Cr2 per tech level above 5.

Pitons: The uses of pitons are described elsewhere. Several specific types are available.

Tech Level 4 Pitons: The simplest pitons are soft iron spikes driven into rock. Reliability: 2 x tech level. Weight: .3kg each. Cost: Cr5 each.

Tech Level 7 Pitons: An advanced version of the pitons above, using superior alloys. Reliability: 7+1D. Weight: .2kg each. Cost: Cr6 each.

Tech Level 8 Pitons: These pitons are a radical design, not driven into rock at all, but using a quick-setting super-glue to attach them to rock faces. Once set, they cannot be removed without using special solvents; however, use of these pitons doubles ascent speeds. Reliability: tech level. Weight: .2kg each. Cost: Cr6 each. The solvent weighs .5kg (500 applications), and costs Cr20.

Tech Level 10 Pitons: The ultimate in pitons, these sophisticated devices include a small battery pack and a powerful heating element in the tip. When activated, a sudden white-hot burst of heat helps set the piton with a minimum of effort (just steady pressure by the climber). Reliability: tech level-1D (in event of failure, they can function as tech level 7 pitons instead). Weight: .3kg each. Cost: Cr10 each.

Pitons can be used as weapons in some cases. Tech 4, 7, and 10 pitons can function as crude daggers for combat purposes. Switched on, a tech 10 piton attacks as a dagger, but does damage as a laser carbine.

Rock Hammer: A rock hammer is required to set a tech 4 or tech 7 piton. It can also be used as a brawling weapon (treat as Club-1) as needed. Tech Level = 2+. Reliability: tech level+1D. Weight: 1kg. Cost: Cr10.

Backpack: Backpacks increase a character's carrying capacity. When wearing one, 1/3 of the character's Strength rating, in kilograms, can be added to the normal encumbrance figures. Unloaded, the pack has a weight of 3kg; its capacity is 25kg. Objects cannot be stored in it if they exceed the dimensions of 60cmx45cmx15cm. Tech Level 3+. Cost: Cr45.

Ice Ax: An ice ax is frequently useful in making climbs in snow and ice. Any character carrying an ice ax increases his Ice Climbing skill by one level as long as he has the ax; he must have Ice Climbing skill to start with. Tech Level = 3+. Reliability: tech level. Weight: 1.5kgs. Length: 1000mm. Cost: Cr25.

Crampons: Crampons are special spiked attachments strapped to boots to assist in climbs in icy conditions. Wearing crampons increases the character's speed over ice by 50%. Tech Level = 4+. Reliability: tech level. Weight: negligible. Cost: Cr20 per pair.

Jumar: A jumar is a personal hoist which makes roped ascents and descents much easier to undertake. Use of a jumar reduces the exertion of rock climbing by 1 Endurance point per hour, regardless of pitch. Jumars do nothing to increase speed; they merely make the climb easier. Tech Level = 6+. Reliability: tech level. Weight: 1kg. Cost: Cr50.

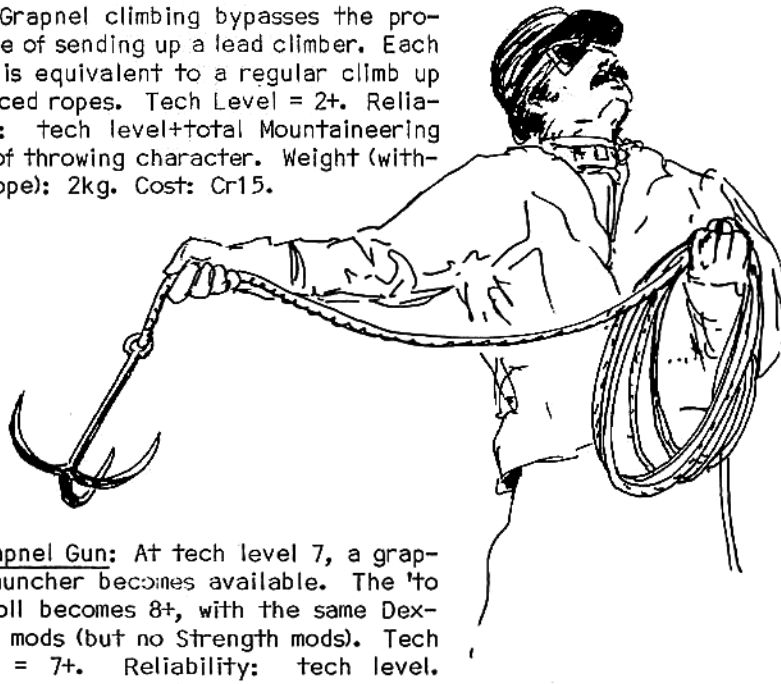
Mechanical Hoist: A mechanical hoist is used to haul heavy weights (supplies, people, etc.) up along walls and steep slopes. Hoists of this type rely on people to furnish the lift. A mechanical hoist can be built to almost any specifications, the size of the load being limited only by the breaking point of the rope (usually 1-6 tons). Load capacity is 20xStrength of individuals engaged in hauling, in kilograms. Tech Level = 1+ (not commonly used past TL8). Reliability: Mountaineering skill (total)+JOT skill of person assembling the rig. Weight: 10kg per 500kg lift capability (minimum 10kg). Cost: Cr5 per 10kg of components.

Powered Hoist: A powered hoist replaces the mechanical hoist around tech level 5-7. A power source (generator, engine, etc.) is required; this replaces the need for individuals to haul a load up by brute strength. Otherwise, all information is as given before.

A powered hoist capable of lifting 1 ton, purchased at TL8, would weigh 25kg and cost Cr100. Extrapolations from this will allow varied tech levels, sizes, and capacities.

Grapnel: A grapnel is a hook at the end of a line, used for attempting climbs up sheer pitches. Characters using grapnels must roll 10+ (once per round) 'to hit' the target; DM+1 for Dexterity 9+, DM+1 for Strength 10+, DM-1 for each of Strength or Dexterity 6-. Maximum range for such a throw is about 30 meters; thus, 7 separate climbs would complete a 200 meter pitch (planting the grapnel on a ledge or projection, climbing to it, then repeating).

Grapnel climbing bypasses the procedure of sending up a lead climber. Each climb is equivalent to a regular climb up emplaced ropes. Tech Level = 2+. Reliability: tech level+total Mountaineering skill of throwing character. Weight (without rope): 2kg. Cost: Cr15.



Grapnel Gun: At tech level 7, a grapnel launcher becomes available. The 'to hit' roll becomes 8+, with the same Dexterity mods (but no Strength mods). Tech Level = 7+. Reliability: tech level. Weight of grapnel: 2kg; weight of launcher: 10kg. Cost: Cr100.

CLOTHING AND ACCESSORIES

Rock Shoes: Lightweight, sturdy shoes specifically designed for stability; these are very useful to lead climbers ascending walls and steep slopes where toeholds must be constantly sought. With rock shoes, a climber treats his Rock Climbing skill as one level higher than usual, if he has any skill initially. Tech Level = 4+. Reliability: not applicable. Weight: negligible when worn; .5kg when carried. Cost: Cr10.

Climbing Boots: Sturdy hiking boots worn for long excursions. A well-chosen climbing boot is valuable in reducing the wearer's rate of fatigue — reduce all Endurance costs for travel on foot by 1/2 point per hour while wearing climbing boots. Tech Level = 3+. Reliability: not applicable. Weight: negligible when worn; 1.5kg when carried. Cost: Cr50.

Snowshoes: Large, somewhat awkward, but highly effective, snowshoes permit a character to increase speed over snow by 50%. Tech Level = 1+. Reliability: not applicable. Weight: 1kg per pair. Cost: Cr60.

Sun Goggles: Sun goggles are very important to the comfort and safety of any climber. Without goggles, blindness — either permanent or temporary — can occur both from sun reflected off ice and snow and from the more intense ultraviolet rays present in Thin and very Thin atmospheres. Tech Level = 4+. Reliability: not applicable. Weight: negligible. Cost: Cr20.

Cold Weather Clothing: Various types of cold weather gear are given in other Traveller sources. For the purposes of this booklet, the effects of cold weather garb will be discussed, rather than the actual types.

One kilogram of cold weather clothing will increase the apparent temperature by 5°C, with Tech Level 1 fabrics. At Tech Level 8, this becomes .5kg per 5° change, and at Tech Level 12, .25kg (the change is gradual between these two values). For every 2kg of clothes worn, reduce effective Dexterity by 1 point. Cold weather clothing still doesn't count against the weight a character can carry while it is worn; weights are tracked for carrying purposes, and to determine protection value.

Characters may not benefit from more than the equivalent of 1kg of cold weather gear if they want the use of their hands (gloves reduce Dexterity drastically). Thus, when a character is doing anything requiring the use of his hands, he could suffer frostbite even while wearing an adequate amount of body covering.

Heatsuit: A skin-tight, head-to-toe covering (complete with gloves and transparent, polarizing faceplate) providing protection against extreme cold. A power source drives a fine network of heating filaments woven into the fabric. An internal thermostat allows a setting of any desired apparent temperature, negating the effects of low temperatures and wind chill. Tech Level = 8+. Reliability: tech level+1D. Weight: negligible, but treat as no armor in combat. Cost: Cr300.

Heatsuit Battery: Disposable battery capable of powering a heatsuit's filaments for a period of 72 hours. Tech Level = 8+. Reliability: tech level. Weight: .5kg. Cost: Cr40.

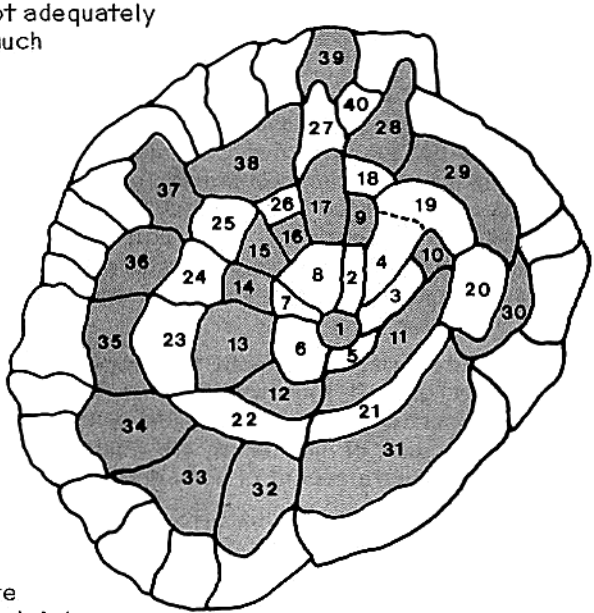
Heatsuit Powerpack: An energy source designed to replace the battery for a heatsuit. It powers the suit for up to 144 hours without recharging, and is capable of recharging in one hour from any standard power source. Tech Level = 10+. Reliability: tech level. Weight: 2kg. Cost: Cr500.

Using this Booklet

As an example for referees, the following pages show how a mountain area can be constructed, with some hints about how various specific elements of the rules can be injected into the basic situation presented by this sample mountain.

THE MAP

The map shows a portion of a mountain (generated from the rules in this booklet) in an abstract fashion. Scale is not presented at all on the map . . . any scale which could illustrate the entire map would not adequately convey information of much use anyway. Instead, various terrain features on the map are keyed to text descriptions on the pages that follow. These descriptions note altitudes, slopes, and special problems for each area of the ascent.



BASIC DATA

Shown is Mt. Surimsi, located in the hinterlands of Efate (Regina 0105 A646930-D). Air pressure at sea level is .65atm (a taint makes filter masks necessary as well). Mt. Surimsi's base is 1.5km above sea level, where the air pressure is .60atm. A low mountain, only 6.5km tall, the air pressure at the summit is .13atm, a Very Thin atmosphere requiring artificial assistance. In summer, Mt. Surimsi enjoys a temperature of 30°C at its base; at the summit, the temperature is nearly 33° cooler — a chilly -3°C. The 'timber line' is 7.4km above sea level (5.9km up the mountainside); in summer, the 'snow line' is at the same point.

From these key facts, it is possible to begin a detailed examination of the mountain itself.

THE MOUNTAIN

1. **Summit.** Altitude is 8000 meters above sea level.
2. **Arete.** 7750-8000 meters; Moderate (45°); 400 meters. West slope is Steep (60°), east slope Steep (60°).
3. **Arete.** 7750-8000 meters; Gentle (30°); 550 meters. North slope is Sheer (90°), south slope Steep (60°).
4. **Valley.** 7250-7500 meters; Gentle (30°); 450 meters. Formed automatically between two aretes, #2 and #3.
5. **Wall.** 7750-8000 meters; Sheer (90°); 2 pitches, 4(115m), 5(135m).
6. **Buttress.** 7750-8000 meters; Moderate (45°); 400 meters.
7. **Ridge.** 7750-8000 meters; Moderate (45°); 400 meters.
8. **Slope.** 7750-8000 meters; Steep (60°); 1 pitch, 1(300m).
9. **Wall.** 7500-7750 meters; Sharp (75°); 1 pitch, 1(250m).
10. **Wall.** 7500-7750 meters; Sheer (90°); 2 pitches, 3(135m), 4(115m).
11. **Buttress.** 7500-7750 meters; Sharp (75°); 4 pitches, 3(95m), 4(85m), 3(40m), 2(30m).
12. **Wall.** 7500-7750 meters; Sharp (75°); 2 pitches, 1(160m), 2(90m).
13. **Ridge.** 7500-7750 meters; Gentle (30°); 550 meters. North slope runs to glacier #14, south slope Sharp (75°).
14. **Glacier.** 7000-7750 meters; Moderate (45°); 1050 meters. South side is ridge #13, north side is ridge #15.
15. **Ridge.** 7500-7750 meters; Gentle (30°); 550 meters. South slope merges with glacier #14, north slope Steep (60°).
16. **Wall.** 7500-7750 meters; Mild (105°); 2 pitches, 6(90m), 6(160m).
17. **Arete.** 7500-7750 meters; Sharp (75°); 2 pitches, 4(175m), 4(75m). East and west sides are both Steep (60°).
18. **Wall.** 7250-7500 meters; Sharp (75°); 3 pitches, 1(110m), 1(115m), 2(25m). Continuation of #9.
19. **Buttress.** 7250-7500 meters; Moderate (45°); 400 meters. Valley #4, at same level, forms part of buttress.
20. **Ridge.** 7250-7500 meters; Moderate (45°); 400 meters. North slope is Moderate (45°), south slope Steep (60°).
21. **Wall.** 7250-7500 meters; Sheer (90°); 2 pitches, 4(155m), 4(95m).
22. **Slope.** 7250-7500 meters; Steep (60°); 1 pitch, 3(300m).
23. **Ridge.** 7250-7500 meters; Gentle (30°); 550 meters. #13 continues. North slope is Moderate (45°, to chute #24), south slope Steep (60°).
24. **Chute.** 7000 meters; Flat (0°); 450 meters. South side is ridge #23, Moderate slope (45°) up, north side ridge #25, Gradual slope (15°) up.
25. **Ridge.** 7250-7500 meters; Moderate (45°); 400 meters. South slope Gradual (15°, to chute #24), north slope Sharp (75°).
26. **Wall.** 7250-7500 meters; Mild (105°); 3 pitches, 5(75m), 4(55m), 5(120m). Continuation of #16.
27. **Arete.** 7250-7500 meters; Sharp (75°); 3 pitches, 1(115m), 2(65m), 1(70m). Continuation of #17. East and west sides both Steep (60°).
28. **Arete.** 7000-7250 meters; Steep (60°); 3 pitches, 2(125m), 3(100m), 2(75m). North and south slopes both Steep (60°).
29. **Wall.** 7000-7250 meters; Sheer (90°); 1 pitch, 6(250m).
30. **Slope.** 7000-7250 meters; Steep (60°); 2 pitches, 3(170m), 2(130m).
31. **Buttress.** 7000-7250 meters; Steep (60°); 2 pitches, 1(120m), 2(180m).
32. **Arete.** 7000-7250 meters; Steep (60°); 3 pitches, 1(75m), 1(80m), 2(145m). East slope is Steep (60°), west slope Sharp (75°).

33. **Slope.** 7000-7250 meters; Moderate (45°); 400 meters.
34. **Buttress.** 7000-7250 meters; Moderate (45°); 400 meters.
35. **Ridge.** 7000-7250 meters; Gentle (30°); 550 meters. Continuation of #13 and #23. North slope is Moderate (45°), south slope Steep (60°).
36. **Buttress.** 7000-7250 meters; Steep (60°); 2 pitches, 2(190m), 3(110m).
37. **Ridge.** 7000-7250 meters; Gentle (30°); 550 meters. Continuation of #15 and #25. North slope is Steep (60°), south slope Moderate (45°).
38. **Slope.** 7000-7250 meters; Moderate (45°); 400 meters.
39. **Arete.** 7000-7250 meters; Sharp (75°); 4 pitches, 1(35m), 2(85m), 3(90m), 2(40m). Continuation of #17 and #27. East and west slopes are both Steep (60°).
40. **Valley.** 6750-7000 meters; Steep (60°); 250 meters. Occurs between aretes #28 and #39.

Continuing the Process: As is evident, it takes a great deal of work to map out a mountain (but no more than to assemble deck plans for a starship of 5-6,000 tons). Each successive circle of terrain can be added from the appropriate tables, leading in the end to a complete map of the mountain. The key yields distances, slopes, and other basic information.

When this stage is completed, the referee may go back to add in obstacles (gendarmes, cols, etc.) in specific locations, and can note them in the map key. After that, event tables should be drawn up for each terrain type to be encountered, as well as a normal animal encounter table or two; it is suggested that at least two such animal tables be used, one below the timber line, one above. If some areas are designated as wooded, or lakes are placed, or other variations in terrain provided, these present logical places to stock with different animal types. The referee may wish to actually map out specific terrain features in more detail; if a particular valley or pass is likely to be crucial to the adventure, a map should be presented. For basic guidelines, the map key can be consulted; however, there is no need to worry about exact relationships between this local map and the overall map of the mountain, intended strictly as an abstract representation — no more.

The map, by itself, does not provide much information — but the map and the key together can. For instance, in the portion that has already been provided, an easy approach to the summit can be spotted. The ridge at #35, #23, and #13 is a long (1650 meter) gently sloping path up to buttress #6 and so to the summit. Assuming that access to this ridge from below proved manageable, this would be the easiest route for a climbing party.

For an in-depth look at a mountain (and an adventure set against that backdrop), see Ascent to Anekthor, a Gamelords' **Traveller** product. This adventure makes use of these rules, demonstrates many facets of a climbing expedition, and provides a fully mapped out mountain.

Adventures in the Mountain Environment

The material presented in this booklet makes it possible for players and referees to put together adventures which elaborately recreate the hazards and challenges of mountaineering and wilderness travel. Not all the rules need be used, of course, but it is possible to present such activities in as much detail as may be desired.

Since such extensive rules are available, this section will present some ways to make use of them in the context of normal **Traveller** adventuring. Mountaineering can be a fascinating diversion, and makes a fine change of pace from more routine operations.

EXPLORATION AND INVESTIGATION

Mountaineering parties may be required to penetrate a rugged wilderness. Some specific goals might include a climb of a volcano (with a whole additional magnitude of dangers and obstacles not even considered in these rules, but easily assembled and added in) to conduct seismic tests or other scientific observations; archeological expeditions searching for relics of a past mountain-dwelling civilization (the discovery of the Peruvian archeological site at Machu Pichu is a good Terrestrial example of this); or a search for some specific form of mineral wealth.

RESCUE AND SALVAGE

Mountaineering can come into play in cases where an accident has befallen some party, aircraft, or starship, and stranded it in the mountains. If weather conditions make it impossible to land vehicles in safety, climbers might be dispatched to carry in supplies or medical aid to the stranded survivors. Or climbing might be necessary to reach a downed craft in terrains where vehicles simply cannot go. Climbs will tend to be short — base camps can be established at some safe point nearby, without the need to make a full-scale climb from base to summit — but the situation is no less exciting.

HUNTING

A group dealing in safari work might be forced to become mountaineers if on the track of some type of game found only in hill country. This sort of adventure would be excellent for breaking the routine of an ordinary hunting expedition.

MILITARY OPERATIONS

Commando assaults up steep cliffs are a staple of exciting military-oriented adventures, and mountains have had a profound effect on

military operations since the days when Hannibal led his elephants through the Alpine passes into Italy. Raids on mountain top command posts or signalling stations, defense of a forward observer's position (as in GDW's Double Adventure 5, Horde), or ambushes set up to trap enemy forces moving through a pass could all be subjects for adventures taking place in a mountain setting.

Actual adventures could also revolve around groups of mountain-trained mercenaries attempting to escape after the failure of one of the operations described above. Virtually anything is possible, with a little imagination and planning.

SPORT

In the last analysis, the purest form of mountaineering will be found in sport climbing. This is not necessarily an afternoon's expedition up a popular, well explored mountain, either . . . any climb undertaken for the pure glory of the conquest — whether it's the Grand Canyon or Mt. Everest — is a climb made for sport. Adventurers might themselves wish to undertake such a venture, for glory or for money — or they might be hired by some patron in need of experienced climbers to assist in such a challenging ascent.

FINAL NOTES

These suggestions touch upon only a few of the more obvious adventure possibilities, just as the rules, events, and equipment are by no means complete. Referees are encouraged to make use of the material presented here in whatever way best enhances the course of their own **Traveller** games . . . and, if interested in the Mountain Environment, should feel free to introduce additional material as needed.

This booklet has been designed to be representative, rather than definitive — to show the way for others to follow. You will get as much out of **Traveller** as you care to put into it; it is our hope that, using these rules and ideas, you can get just a little bit more than was previously possible.

The Mountain Environment is a **Traveller™** supplement dealing with the particular situations and problems of travel and survival in rugged terrain. Included are specific rules systems designed to simulate mountaineering and other activities and hazards found in mountain terrain, explanations of equipment available for use in such terrain, and a guide to constructing specific mountain situations, special events and encounters, and adventures.

Challenge your players to broaden their horizons and enter **The Mountain Environment.**

Gamelords, Ltd.
18616 Grosbeak Terrace, Gaithersburg, MD 20879
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